Clinical and Experimental Optometry

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/tceo20

Barriers and enablers to low vision care and rehabilitation in sub-Saharan Africa within a global context

Carl Halladay Abraham, Diane van Staden & Nishanee Rampersad

To cite this article: Carl Halladay Abraham, Diane van Staden & Nishanee Rampersad (22 Nov 2023): Barriers and enablers to low vision care and rehabilitation in sub-Saharan Africa within a global context, Clinical and Experimental Optometry, DOI: 10.1080/08164622.2023.2254766

To link to this article: https://doi.org/10.1080/08164622.2023.2254766

Published online: 22 Nov 2023.

CLINICAL AND EXPERIMENTAL OPTOMETRY
https://doi.org/10.1080/08164622.2023.2254766

SCOPING REVIEW

Barriers and enablers to low vision care and rehabilitation in sub-Saharan Africa within a global context

Carl Halladay Abraham [a,b], Diane van Staden[a] and Nishanee Rampersad[a]

[a]Discipline of Optometry, University of KwaZulu Natal, Durban, South Africa; [b]Department of Optometry and Vision Science, University of Cape Coast, Cape Coast, Ghana

ABSTRACT

Low vision is an uncorrectable form of visual impairment that affect millions of people worldwide. Low vision care and rehabilitation are essential to improving the independence of affected individuals. Even though sub-Saharan Africa has one of the highest burdens of low vision globally, there are inadequate care and rehabilitation services in most countries and in some cases they are non-existent This scoping review aimed to identify the barriers and enablers to low vision care and rehabilitation in sub-Saharan Africa and assess these within the global context. The review was conducted using the five-step Arksey and O'Malley framework. Search terms were formulated based on the research questions and a search strategy was designed to search for eligible research articles from electronic databases; Pubmed, Ovid, Medline, and Embase. The data was screened by two members of the research team in accordance with set inclusion and exclusion criteria. Twenty-five out of 260 articles satisfied the inclusion criteria for the study. Inadequate low vision care infrastructure and supplies, non-standardised training of low vision care providers, health system failure and poor awareness of low vision care were the main barriers noted by eye care practitioners. Patients living with low vision cited the cost and availability of low vision aids, societal stigma, and poor awareness of services as the main barriers. No direct enablers were identified in sub-Saharan Africa; however, practitioners suggested improved training in low vision as a potential enabler. The barriers to low vision care and rehabilitation services identified were not unique to sub-Saharan Africa when viewed within a global context. Adopting and adapting solutions from other countries may therefore assist in improving low vision care and rehabilitation in sub-Saharan Africa.

ARTICLE HISTORY
Received 16 April 2022
Revised 24 August 2023
Accepted 29 August 2023

KEYWORDS
Barriers; enablers; low vision; rehabilitation; sub-Saharan Africa; visual impairment

Visual Impairment (VI) is the highest cause of disability globally and affects about a quarter (2.2 billion) of the world's population.[1] Global estimates indicate that about 295 million people have Moderate to Severe Visual Impairment (MSVI) and over 90% of those affected live in Low to Middle-Income Countries (LMICs). Sub-Saharan Africa (SSA) is home to about 7% (20.4 million) of persons with MSVI with an age-standardised prevalence per 1000 of 34.64 (21–40) as shown in Figure 1[1,2]

Moderate to Severe Visual Impairment and Blindness (MSVIB) are the most disabling categories of visual impairment. Low vision, which is a sub-category of MSVIB, is irreversible VI with the best-corrected visual acuity of less than 6/18 to 3/60 and/or a visual field of less than 20 degrees from central fixation in the better eye.[3]

Low vision poses multiple challenges in the daily activities of affected persons. It is associated with an increased risk of falls,[4,5] reduced capacity to do everyday activities,[6] reduced quality of life, increased healthcare costs, and higher mortality rates.[7] The negative economic and social impact of low vision on the individual and his or her society is often substantial.[8] Low Vision Care and Rehabilitation (LVCR) offers practical solutions which harness the affected individual's residual vision by providing vision aids or substitutes to improve independence, productivity, and social participation, improving the outcomes of clinical and functional measures,[9] the level of independence, and the vision-related quality of life of beneficiaries.[10]

Despite having an estimated 20.4 million persons with MSVI, the fifth highest in the world (Figure 1), SSA has the least developed LVCR services.[11] The region has an age-adjusted prevalence of 40.6% in some parts such as West Africa, which is higher than the global prevalence.[2] Most countries in SSA have no Low Vision Service (LVS), and the few that do, have a service coverage of less than 10%.[12]

Past interventions to increase the coverage of LVS in LMICs include the provision of low-cost Low Vision Aids (LVAs) through the Hong Kong Society for the Blind (HKSB), and the training of health workers such as community-based rehabilitation officers (task shifting) to help provide much-needed low vision care. The impact of these, however, seems to have been minimal. This paper seeks to highlight the barriers and enablers to LVCR in SSA and further compare these to the barriers and enablers identified in countries outside Africa. This comparison is essential to understanding whether the challenges present in SSA are the same across various populations in different economic regions. This will help to assess the possibility of adopting solutions used in other non-SSA countries to improve accessibility to LVCR in SSA.

Methods

The scoping review was guided by the Arksey and O'Malley[13] framework which outlines five stages for conducting a scoping review. The stages include identifying the research question, identifying relevant studies, study selection,

CONTACT Carl Halladay Abraham carl.abraham@ucc.edu.gh

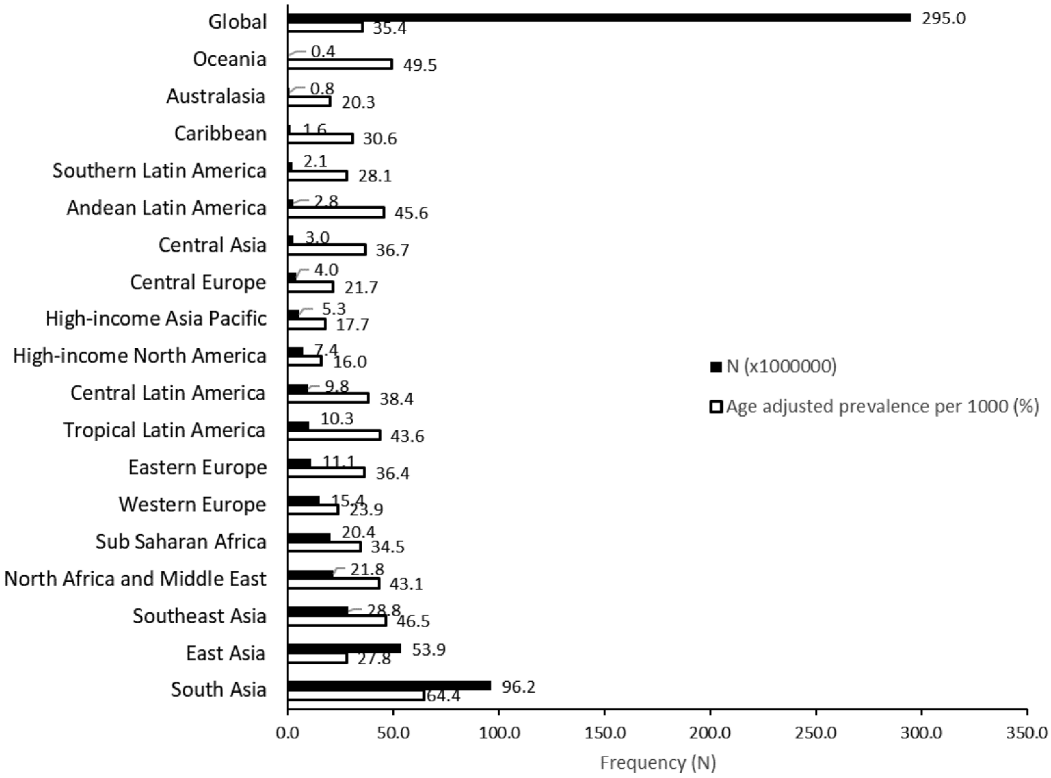

Figure 1. Number of cases and age-standardised prevalence of persons with moderate to severe visual impairment in 2020[1,2].

charting the data, and collating, summarising and reporting results.[13]

Identifying the research question

The research questions were:

(1) What are the barriers to, and enablers of, LVCR services in sub-Saharan Africa?
(2) How do barriers and enablers of LVCR services in SSA compare to other countries outside Africa?

Eligibility of research question

The Population, Concept, and Context framework was used to assess the eligibility of the research question

- Population: Persons living with low vision
- Concept: Low vision care and rehabilitation services
- Context: Globally

Identifying relevant studies

Inclusion criteria

Research papers published between 1980 and 2021 were included in the study. A study was included if it was published in English and conducted among persons living with low vision, or persons who qualify to access LVS within all age groups.

Studies focusing on barriers to, and enablers of, LVS from the perspectives of health care practitioners, and people living with low vision who access the LVCR services were included in the study.

Exclusion criteria

Studies conducted among students from blind schools or institutionalised participants who had very limited contact with their external social environment were not included in the study. Studies conducted for instrument development and those among participants with multiple sensory disabilities were also excluded. Retrospective, patient records-based studies and reviews were also excluded.

Electronic database search

A search was conducted in four major electronic databases; Pubmed, Ovid, Medline, Web of Science, and Embase. The search terms and strategies are presented in Appendix A.

A search through the reference list of identified records from the database was done and all references that met the inclusion criteria were added to the study.

Study selection

The remaining studies were assessed by reviewing the title and abstract of each paper. This was done by two members of the research team and the final list of studies for the review was decided upon based on consensus after applying the inclusion and exclusion criteria. When the two-member team failed to reach a consensus on the inclusion of a study, a third reviewer was invited to help decide. The full text of the final list of studies was reviewed and the relevant information was extracted (Figure 2). The selected papers underwent independent critical appraisal using the Mixed Methods Appraisal Tool[14] by the two team members.

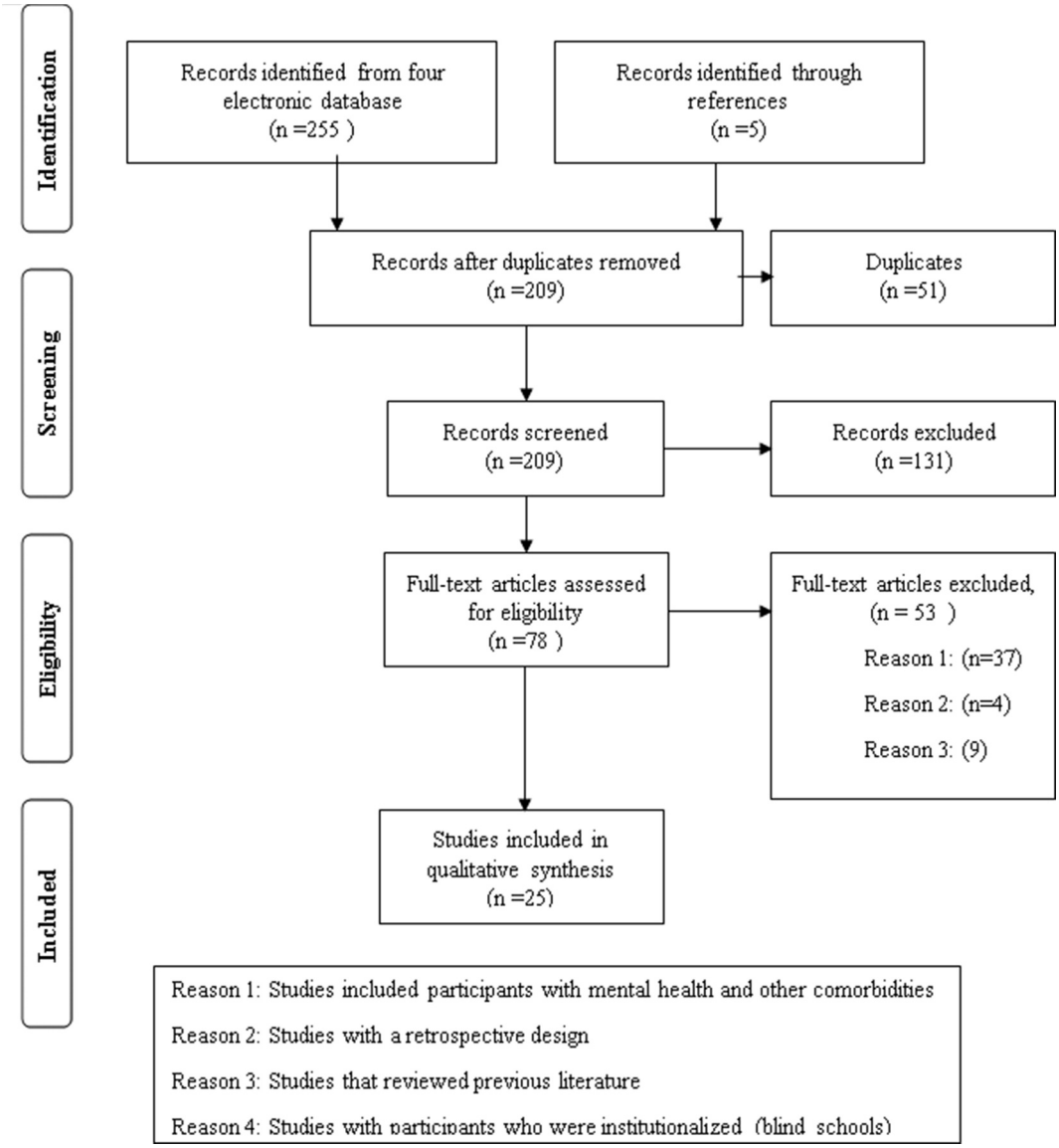

Figure 2. PRISMA flow chart.

Charting the data

The relevant information included authors' names, title of the study, year of publication, country of origin, methods used, practitioners and patient-reported barriers, and suggested enablers were recorded. This process was undertaken by the two members of the research team independently and a series of meetings were scheduled to compare findings.

Collating, summarizing and reporting the results

The charted data were summarised to communicate patient and practitioner-reported barriers and enablers to LVCR. A distinction was made between self-reported barriers faced by practitioners in providing LVS and what practitioners perceive as barriers or enablers experienced by persons seeking LVS. The final report of the study was based on the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-analyses for Scoping Review (PRISMA ScR).[15]

Results

The selected studies are shown in Table 1. Of the 260 studies identified, 78 full text articles were assessed for eligibility and 25 studies were included in the qualitative synthesis.

The selected studies used different approaches in presenting and outlining the barriers and enablers of LVCR. Nine studies focused on only practitioner perspectives[16–24] whilst 10 studies detailed the experiences of patients in accessing LVCR.[25–34] Six studies presented the perspectives of both practitioners and patients[35–40] (Table 1). The sixteen studies which presented information on barriers to low vision care from the perspective of patients comprised two studies from SSA,[35,36] three from non-SSA LMICs,[25,39,40] and the majority were from High Income Countries (HICs).[26–34,37,38]

Five studies[16–18,35,36] from SSA investigated barriers in LVCR from the perspective of practitioners. The participants were mostly optometrists and ophthalmologists. Ophthalmic nurses were participants in two studies[35,36] and in both cases, they formed the minority of respondents (4–7%).[35,36] There were four studies from non-SSA LMICs (three studies from India[20,40,41] and one from Papua New

Table 1. Overview of reviewed studies.

	Authors, year	Country	Methods	Study respondents			
				Optometrist	Ophthalmologist	ON	PLWLV
SSA	Monye et al., 2020	Nigeria	Descriptive cross-sectional study (mixed methods)	9	15	1	10
	Nyankerh et al., 2019	Ghana	A descriptive cross-sectional study	135			
	Kyeremeh, 2018	Ghana	A descriptive qualitative, cross-sectional study	49	1	4	29
	Boadi-Kusi et al., 2015	Ghana	A cross-sectional study	90			
	Okoye et al., 2007	Nigeria	A descriptive cross-sectional survey		80		
NON-SSA LMICs	Sivakumar et al., 2020	India	A cross-sectional study				235
	Sarika et al., 2019	India	Mixed methods	13‡			
	Marella et al., 2017	PNG	Qualitative study	8†	3	2	14
	Jose et al., 2016	India	Cross-sectional study	129	42		
	Khan et al., 2005	India	Cross-sectional study		79		
HICs	Malkin et al., 2020	USA	Cross-sectional study	229			
	Smallfield et al, 2020	USA	Qualitative study				5
	Kaldenberg, 2019	USA	Qualitative study				64
	Mcgrath & Corrado, 2019	Canada	Qualitative study				10
	Kaleem et al., 2018	USA	Online survey		207		
	Kaleem et al., 2017.	USA	Online survey		207		
	Lam et al., 2015	Canada	Cross-sectional questionnaire survey(online)	459			
	Wittich et al., 2013	Canada	Qualitative study	1			35
	Southall & Wittich, 2012	Canada	Qualitative study				21
	Matti et al., 2011	Australia	Cross-sectional study				30
	Overbury & Wittich, 2011	Canada	Cross-sectional study				702
	Connor et al., 2008	Australia	Cross-sectional study	6‡			98
	Nia & Markowitz, 2007	Canada	Prospective nonrandomized observational case series				34
	Copolillo& Teitelman,2005	USA	Qualitative study				15
	Pollard et al., 2003	Australia	Qualitative study				80

Note. SSA: Sub-Saharan Africa, LMICs: Low and Middle income countries, HICs: High income countries ON: ophthalmic nurses, ECP: Other Eye care practitioners, PWLV: Person living with low vision, PNG: Papua New Guinea, †refractionist are included, ‡all ECPs.

Guinea).[39] The studies conducted in India included practising optometrists and ophthalmologists, whilst that for Papua New Guinea included four different cadres of eye care practitioners (optometrists, refractionist, ophthalmologists and ophthalmic nurses). Five of the studies originated from high-income countries (HICs) that also reported barriers to LVCR from the perspective of practitioners (Table 1). Three were from the United States of America,[21,22,24] with one each from Canada[42] and Australia.[37]

Perspectives of eye care practitioners on barriers to low vision service

Table 2 presents a summary of the results on barriers to low vision care from the perspective of eye care practitioners. Four major thematic areas were identified that describe the perceived barriers and enablers to the provision and access of LVCR from the perspectives of eye care practitioners. These include:

- Low vision care infrastructure and supplies
- Standardised training of low vision care providers
- Health system failure
- Awareness and confidence in provision of the service

Low vision care infrastructure and supplies

The unavailability of low vision aids (LVAs) was a significant barrier that was reported by all five studies reviewed from SSA.[16–18,35,36] Apart from an earlier study in Ghana which found that 66% of optometrists[17] reported unavailable LVAs as a barrier to LVCR, current studies consistently show that 95.2%[16] to 94.4%[35] of the optometrists are not practising LVCR in Ghana because LVAs are not available. Unavailability of LVAs was again reported by the majority of ophthalmologists (88%)[18] and tertiary eye care providers (54%)[36] in Nigeria. Where some vision aids were available, they were reportedly costly, therefore patients were unable to purchase the prescribed aids.[36] It was noted further that only about 5–10% of patients were able to afford the prescribed LVAs.[36] The unavailability of LVAs was also reported by studies in non-SSA LMICs.[20,40] In an earlier study, Khan et al.[20] reported that 72.2% of ophthalmologists in India are faced with unavailable low vision devices. Similar findings were reported in Canada where 75.3%[42] of optometrists did not provide LVCR services due to a lack of LVAs. The high cost of the low vision examination and the difficulty in stocking devices were also identified as barriers to the provision of LVCR.[24]

Practitioners from SSA identified the unavailability of physical space[17,36] and equipment[35,36] for patient examination as barriers to the provision of LVS. The study by Kyeremeh et al.[35] reported that 87% of optometrists practising low vision care lacked appropriate equipment. This was comparable to 70.7% of the optometrists in Canada who made a similar assertion.[42]

The lack of trained human resource or specialists in low vision care was reported in four out of the five studies from SSA reviewed.[16–18,36] The barrier was lower among optometrists[16,17] than ophthalmologists.[18] Between 11.2%[17] and 43.8%[16] of optometrists in Ghana reported lack of training as a barrier to LVCR, compared to 73.5% of ophthalmologists in Nigeria.[18] In India, there was a comparatively higher lack of training in LVCR among Ophthalmologists (82.3%).[20]

Reasons that account for these high numbers of practitioners uninvolved in LVCR include lack of interest, low motivation,[17,35] busy ophthalmology practices,[18] the time-consuming and financially unrewarding nature of LVCR provision.[18,35]

Standardized training of low vision care providers

None of the studies identified formalised training[18] and qualification for low vision care within the two SSA

Table 2. Barriers to the provision of low vision care and rehabilitation from the perspectives of practitioners.

		SSA					Non-SSA LMICs				HICs			
	Barriers	Monye et al., 2020	Nyankerh et al., 2019	Kyeremeh, 2018	Boadi-Kusi et al., 2015	Okoye et al., 2007	Sarika et al., 2019	Marella et al., 2017	Jose et al., 2016	Khan et al., 2005	Malkin et al., 2020	Kaleem et al., 2018	Lam et al., 2015	Connor et al., 2008
Low vision care infrastructure and supplies	Unavailable LVAs		✓	✓	✓	✓	✓			✓			✓	
	High cost of low vision service			✓										
	Unavailable infrastructure (Space)				✓									
	Unavailable low vision service							✓			✓			
	High Cost of LVAs	✓		✓			✓	✓				✓		
	Unacceptability of LVAs	✓												
	Time-consuming	✓	✓							✓	✓	✓		
	Inadequate equipment	✓		✓			✓				✓		✓	
	Poor remuneration for providing LVS												✓	
	Lack of motivation		✓							✓				
	†Training of professionals	✓	✓		✓	✓	✓	✓	✓	✓				
Awareness and confidence in provision of LVS	Lack of awareness					✓	✓	✓	✓	✓		✓	✓	✓
	Low confidence in LVS	✓												
Health systems failure	Low Referrals to LV clinics	✓				✓								
	Poor knowledge of referral criteria and outcomes	✓					✓	✓			✓	✓		
	Lack of demand												✓	✓

Note. †Training includes lack of training opportunities, lack of training programmes, poorly trained personnel, LV : Low Vision, LVS : Low vision services, LVAs: Low vision aids.

countries. In Ghana, Nyankerh[16] identified that only 2.3% (4/128) of optometrists provide comprehensive LVCR. Three out of the four low vision practitioners identified had some postgraduate training in low vision care. In Nigeria, the training type and duration for practitioners who provided LVCR varied. The majority of low vision practitioners had received a one- to four-week training, with only four pursuing four-year postgraduate training in low vision.[36] Monye et al.[36] and Nyankerh[16] suggested that the provision of either advanced training or standardised training for low vision practitioners could be significant to low vision care development.

The undergraduate training of optometrists in Ghana and Nigeria includes low vision modules.[16] On the contrary, the residency programme for Ophthalmologists in Nigeria does not have a low vision training component.[18] Lack of requisite training to provide low vision care was also identified in all four studies from non-SSA LMICs.[20,39–41] In Papua New Guinea, some of the respondents who were refractionists, had taken a course on refraction, but were unable to provide LVS because there had been no practical low vision training in their course.[39] In high-income countries, training of low vision care providers was not reported as a barrier in all the reviewed studies except the study from Canada.[42] Despite this 70% of optometrists in Canada, were willing to undergo some form of practical-oriented training or education in low vision care,[42] suggesting a need for strengthened training in this regard. It could also be inferred from the study by Malkin et al[24] that some optometrists lacked the requisite practical training as about 13% of the participants in the USA lacked proficiency in prescribing high adds. Therefore, tailor-made training programmes were recommended for them. However, the apparent discordance in the length of training and certification observed in the studies from SSA and other LMICs was not reported in these two studies.[24,42]

Health system failure

Poor referral pathways and a lack of referral centres were identified by eye care practitioners as a barrier to LVCR in the reports by Monye et al[36] and Kyeremeh et al.[35] The survey of teaching hospitals in South-Eastern Nigeria[36] noted that all participants indicated that they counsel and refer patients to low vision centres. This evidence is consistent with the values reported by a similar study among only ophthalmologists in Nigeria that showed a high number of participants (92.8%) referring patients with low vision to other colleagues.[18] However, reports from the low vision centres themselves indicated low referral rates from referring facilities.[18,36] This was attributed to the belief that the referring facilities were aware that the LVS were poorly resourced and costly.[36]

Three out of five studies reported on the lack of low vision referral centres. In Ghana, only three low vision centres were repeatedly reported by two studies as the prime referral centres for a country of over 30 million population.[16,35] A similar finding was reported in Nigeria where there were only two (2) established low vision centres to a population of 16 million after surveying nine (9) tertiary hospitals in southern Nigeria.[36]

Studies reviewed from non-SSA LMICs and HICs often attributed low referrals to a lack of awareness, which is discussed in a different section of this paper. Kaleem et al[21] however, identified the availability of guidelines as an enabler to adequate referrals. Another enabler was to ensure that there was frequent referral feedback from low vision practitioners to the facility which referred the patient.[37]

Awareness and confidence in the provision of low vision service

Awareness of low vision care can be described at various levels, including awareness of:

- low vision as a visual impairment category
- who can benefit from Low vision care (referral criteria)
- the distribution and location of low vision centres and practitioners.
  the efficacy of low vision care.

Some practitioners in Nigeria were unsure of the outcome of LVS[36] and did not see the need to refer patients for such care. Secondly, more than two-thirds of eye care practitioners[35] also indicated that patients are often unaware of low vision care or where to get the service. This may suggest that non-LV practising eye care providers are not given adequate information about LV services. Improving awareness of low vision care was suggested as a potential enabler of low vision care.[16,36]

A lack of awareness was reported in all studies originating from non-SSA LMICs. This includes lack of awareness about referring criteria,[39–41] impact or efficacy of LVS,[40] and lack of awareness about LVS (74.7%).[20]

However, in HICs, there were only reports of a lack of awareness of referral criteria[22,37] and efficacy of LVS.[22,24]

Perspectives of low vision patients on barriers to low vision service

Sixteen studies reported on barriers to low vision service from the perspective of patients as shown in Table 3. The subthemes identified were

- Cost and availability of LVAs
- Societal stigma, acceptability and usability of LVAs
- Awareness of LVS
- Mobility issues

Cost and availability of low vision aids

The major barriers reported by patients from SSA countries were unavailability[35] and high cost of LVAs.[35,36] It was reported that up to 83.3% of patients interviewed indicated it was very difficult to acquire LVAs.[35]

Among non-SSA LMICs, a minority of participants (10.6%) in a study in India[25] reported that the cost of LVAs was a barrier even though optical LVAs were subsidised by 50%. However, electronic assistive devices were still unaffordable to patients.

The high cost of LVAs was identified in three studies from USA and Canada.[30,31,34] The low vision devices that were identified as being costly in these studies were assistive devices such as CCTVs and other newer technologies. In Canada, cost was still a barrier even when 75% of the cost of the devices was paid for by the government.[31] The lack of LVAs as a barrier was not reported in all studies from the HICs (Table 3) and two studies from non-SSA LMICs.[39,40]

Societal stigma, acceptability and usability of low vision aids

Some patients in SSA did not find the LVAs acceptable and had some difficulty adjusting to their use.[36] The unwillingness to use LVAs due to social stigma or fear of losing employment if their employers became aware of their visual disability was reported by a study in India.[25] This caused

Table 3. Barriers to the provision of low vision care and rehabilitation from the perspectives of persons with low vision.

		SSA		Non-SSA LMICs			High-Income Countries									
	Reported barriers to low vision care	Kyeremeh, 2018	Monye et al., 2020	Sivakumar et al., 2020	Sarika et al., 2019	Marella et al., 2017	Smallfield et al, 2020	Kaldenberg, 2019	Mcgrath & Corrado, 2019	Wittich et al., 2013	Southall & Wittich, 2012	Matti et al., 2011	Overbury & Wittich, 2011	Connor et al., 2008	Nia & Markowitz, 2007	Copolillo, Teitelman, 2005	Pollard et al., 2003
Cost and availability of low vision service	Unavailable low vision services							✓							✓†	✓†	
	Unavailable low vision aids	✓															
	High cost of care					✓		✓									
	High cost of low vision aids		✓					✓	✓							✓	
Societal stigma, acceptability and usability of LVAs	Social stigma			✓				✓	✓		✓					✓	✓
	Difficulty using low vision aids and assistive devices		✓	✓			✓								✓	✓	
	Poor aesthetics of low vision aids								✓							✓	
	Reliance on friends and family/reduced visual demand								✓		✓			✓			
Awareness of low vision services	Lack of awareness				✓	✓		✓			✓		✓	✓		✓	✓
	Difficulty accessing benefits							✓									
	Lack of knowledge about the benefits of low vision care											✓		✓			✓
	Not referred for low vision services				✓										✓		
Mobility issues	Co-morbidities											✓		✓			
	Transportation					✓								✓			

Note. †Inadequate vision rehabilitation services, SSA: Sub-Saharan Africa, LMICs: Low and Middle-income countries, LVAs: low vision aid.

some participants to rely on their residual vision and compromise on their visual demands to function, rather than to use vision aids.[40]

Participants in the study by Copolillo and Teitilman[34] termed some low vision devices as cumbersome or aesthetically unacceptable.[31] Devices such as IPAD being used as assistive devices overcome this barrier, but present patients with another barrier of inability to use some applications or input passwords.[43] Patients prefer them to be discreet, fashionable, and unobtrusive. Secondly, they were unwilling to invest time in learning newer technologies.

Awareness of low vision services

None of the studies from SSA reported on awareness of LVS by patients or persons living with low vision. However, poor awareness among patients, practitioners, and the general population was reported in studies conducted in Papua New Guinea, India, the USA, Canada, and Australia. The studies indicated that participants were either not aware of LVS or where they could get access to them.[39,40]

In HICs, lack of awareness was often attributed to poor communication from practitioners.[30,34] Kaldenberg noted that the practitioner's lack of awareness and perception of low vision care could hamper the possibility of the patient benefiting from it. Some practitioners make fatalistic statements such as 'nothing more can be done'.[28,30] These statements often signalled the end of care and cut off the possibility of any form of referral for rehabilitation. Those that were referred expressed their dissatisfaction with the insufficient information given to them about what low vision is or what they should expect.[28,30,37] O'Connor et al[37] reported that due to the poor awareness of LVS by eye care providers, some patients indicated that they were only referred for LVCR when their vision had completely deteriorated.[37]

Kaldenberg[30] reported that a lack of awareness in the general population was a barrier to accessing or utilising LVAs and services.[30] This stems from the fact that society is sensitised to the dichotomy of vision which categorises the population as either blind or sighted, with many unaware of the varying levels of vision loss. This makes the general population think that persons who have low vision or are partially sighted are being untruthful when they claim to be visually impaired. This often transcends to close family members.[28]

Poor awareness could therefore prevent patients from identifying themselves as persons with low vision[28] and limit access to LVCR.[39,40] It also negatively influences the referral pattern of practitioners[30] and has the potential to erode the social support needed[28] to help in overcoming the disabling effects of low vision.

Mobility issues

Transportation and poor health (co-morbidities) contributed significantly to the ability of persons with low vision access accessing care. Transportation was reported as a barrier in two studies from Australia[28,37] where participants could not attend LVS because they were not comfortable using regular public transport systems, whilst others needed sighted people to accompany them. Poor health also often prevented patients who had been referred from assessing LVCR.[26,37] Some co-morbidities were disabling and sometimes more life threatening than the visual impairment they may be experiencing.[37]

Enablers to low vision care

Twelve studies included in this study reported on enablers to low vision care (Table 4). Enablers of low vision care from the perspective of eye care practitioners differed when compared to persons living with low vision. The most commonly identified enabler among eye care practitioners was the training of

Table 4. Enablers of low vision care and rehabilitation from the perspective of practitioners and persons living with low vision.

		SSA		Non-SSA LMICs	High-Income Countries								
	Enablers to low vision care	Monye et al., 2020	Nyankerh et al., 2019	Sarika et al., 2019	Kaleem et al., 2017.	Lam et al., 2015	O'Connor et al., 2008	Kaldenberg, 2019	Mcgrath & Corrado, 2019	Wittich et al., 2013	Southall & Wittich, 2012	Matti et al., 2011	Overbury & Wittich, 2011
Practitioners	Training low vision practitioners	✓	✓	✓		✓							
	Creating awareness of referral criteria			✓	✓								
	Creating awareness of available LVS	✓	✓	✓									
	Setting up counselling sessions			✓									
	Provision of subsidies for LVS	✓											
	Expanding low vision service†	✓	✓						✓				
	Referral feedback from LV centres						✓						
	Proximity of referring facility to the LV centre				✓								
Persons living with low vision	Transportation							✓				✓	
	Access to support groups							✓					
	Support from family							✓					
	Creating societal awareness on LV						✓		✓				✓
	Stage of grief influences access to LVS										✓		
	Degree and type of visual impairment												✓
	Proximity of facility						✓			✓			

Note. †Included increasing the number of centres and providing integrated care in general eye care facilities, LVS: low vision service, LV: Low vision, SSA: Sub-Saharan Africa, LMICs: Low and Middle-income countries.

professionals to provide low vision care.[16,36,40,42] Awareness creation was the second highest enabler identified.[16,36,40] These enablers were mostly identified from studies conducted in SSA and non-SSA LMICs.

In SSA and other LMICs, there were no reports of enablers to low vision care from the point of view of patients. Among the reviewed studies from HICs, the most identified enabler among patients was the need to create awareness among the society to reduce the level of stigma faced by people living with low vision.[27,31,37] Mcgrath and Corrado[31] indicated that some participants were comfortable using the white cane because it was more socially acceptable. Other enablers identified in studies from HICs included volunteer driver services, access to peer support, and support from family members.[26,30] Kaldenberg[30] indicated that participants who had access to community-arranged-free transport services were more likely to visit low vision centres. Secondly, the proximity of LVS and, most importantly, having to access low vision care in the same facility where other vision needs were provided were important enablers to accessing low vision care.[37,38] Lastly, persons with a poorer vision that negatively impacted their independence were more likely to access LVS.[27]

Discussion

This review focused on barriers and enablers to LVCR services in SSA when compared to the same elsewhere in the world. Identifying the barriers and enablers to accessing and utilising any form of health care intervention is one of the first steps in evaluating the health system to strengthen it.

Low vision care infrastructure and supplies as a barrier

Inadequate low vision care infrastructure and supplies were the major barriers to the provision of low vision care in SSA countries[17,36] and non-SSA LMICs.[20,40] This may be due to the perceived dichotomy of the provision of LVCR. Practitioners are grouped distinctively into whether they are low vision practitioners or not. The studies reviewed did not provide a specific definition for a low vision practitioner, but the reports suggest they are persons who provide comprehensive LVCR which includes prescribing LVAs.[21,36] Lam et al.[42] proposed a continuum of services that may provide a useful template to properly quantify the availability of LVC services.[42] The levels of care include in this continuum include:

- Recognition of a case;
- Assessment of visual function
- Assessment of disability
- Manage a patient with minimum visual disability and
  - simple goals using high-powered additions and lighting;
  - simple goals using optical devices such as hand magnifiers, stand magnifiers and filter lenses;
- Manage a patient with more than minimum visual disability who requires more than basic devices;
- Manage a patient with complex goals.

These levels of care will help practitioners who may not have had additional training in LVCR appreciate their role in the care of persons living with low vision.

Availability and affordability of low vision aids

In SSA and non-SSA LMICs, access to LVAs was due to their unavailability and where they were available, even basic optical aids were noted as costly.[17,18,35,36] However, the limited access to LVAs reported in HICs[24,42] was due to the high cost of such aids, especially electronic LVAs. The provision of subsidised LVAs by the World Health Organisation has been a significant contribution to the development of LVCR. However, apart from the report that about 90 countries benefited from the initiative,[44] there are no published literature that have assessed its overall impact. The absence of a workable and sustainable approach to the provision of LVS may have resulted in the persistence of this barrier. One of the solutions that may help in the availability and reduced cost of LVAs is for countries in SSA to manufacture LVAs locally. In the case of optical devices, the lenses can be fixed in optical laboratories similar to how conventional spectacles are dispensed. This will help to prevent the need to stock and maintain an inventory of low vision devices, which is often a difficult task.[24]

Training of low vision practitioners

Lack of standardised training in low vision was identified as a barrier to low vision care provision. This barrier was not identified in HICs. A potential solution may be to ensure standardised low vision training programmes in SSA and other LMICs. This can be achieved through the strengthening of the low vision contents in undergraduate training programmes and the possible development of post-graduate residency programmes in low vision for eye care practitioners.

Poor referral system

An inefficient referral system, primarily attributed to SSA countries, is considered a health system failure (Ghana and Nigeria). This barrier was also identified in other LMICs and HICs.[18,21,35–37,40] The main causes of this barrier are the unavailability of facilities and the lack of trained personnel. In most HICs, these barriers were directly associated with the level of awareness about low vision care of both patients and practitioners. Sarika et al.[40] demonstrated that increased awareness and an established protocol for referrals of persons with low vision improved access and utilisation to LVCR services in a tertiary healthcare facility in India.[40] This strategy can therefore be adopted in other countries with similar challenges.

Low vision care awareness and effectiveness

Most studies reported a lack of awareness and confidence in the effectiveness of LVS.[18,28,30,35,37] Poor awareness among both practitioners and patients could be seen as a universal barrier and will necessitate that any low vision program will need a strategy to improve awareness among patients, practitioners, and the general population. The current study showed that poor awareness will still exist independent of the level of development of the low vision care programme. Improving awareness has the potential to play an important role in helping to minimise the other barriers that were identified. Sufficient awareness of low vision care can improve low vision-related health care systems, make clinical and human resources available, and ultimately improve access and utilisation of LVS. Improved awareness is also pivotal in dealing with stigma as

a barrier to accessing services since stigma affects patients' willingness to seek services or use the aids prescribed, especially in public places.

The design and reporting of further research that seeks to investigate awareness of low vision care should explore awareness of low vision as a visual impairment category, who can benefit from low vision care (referral criteria), distribution of low vision centres and practitioners, and the efficacy of low vision care. Consequently, questionnaires or interviews that will be designed may have to take into account these four areas of awareness and target practitioners, persons living with low vision, and the general population. This will aid in better understanding this barrier and facilitate the formulation of appropriate solutions.

Transportation for persons with low vision

Transportation has been known as a major challenge to persons living with visual impairment.[45–48] The problem is multifaceted and ranges from the inaccessible nature of public transport,[49] high cost,[46] and poor service from public transport operators.[45,50] In SSA countries, most low vision centres are few and often located in urban centres.[16] Telemedicine is emerging as a potential solution to the transportation-related barrier[51] however, there is currently no strong evidence of its effectiveness and there has not been a simple implementation of this approach in SSA.

Tools for assessing barriers and enablers to LVCR

An unintended finding of this study was that there were no standardised questionnaires to serve as a guide for measuring barriers to low vision care. In most of the studies, the entity which constituted the greatest barrier was seen as the one which was most frequently mentioned by participants. A barrier may often be mentioned, but may not be the most important barrier. Therefore, it is recommended that a tool that properly assesses barriers may need to be developed or participants may need to be allowed to report and possibly rank the barriers that they experience.

Study strengths and limitations

While the number of countries represented was limited, a major strength of this study was that most of the studies included were qualitative and employed techniques that provided in-depth information on the barriers to LVCR services. The viewpoints of the major stakeholders (service providers/practitioners and the service seekers/patients) were presented. However, studies from SSA were practitioner-centred, which prevented the identification of enablers to low vision care from the perspective of patients. This is in contrast to studies from North America and Australia[26,27,30–32,37,38] that reported on the perspectives of patients living with low vision. The comparison of the studies conducted in SSA countries with other countries outside Africa foregrounds the problem being investigated in a wider global context which helps to easily evaluate the enormity or otherwise extent of the problem.

The limited number of studies from SSA made may affect the generalisability of the findings.

It is also acknowledged that the data presented may not be exhaustive as four databases were assessed with stringent inclusion criteria.

Conclusion

This scoping review synthesised available knowledge on barriers and enablers to low vision care globally, with a special interest in SSA countries. Most reviewed studies from the region were from Western Africa, which may therefore not be fully representative of the region. This highlights the gaps in low vision research across the SSA region, and presents an opportunity to stimulate more research in this area across other regional blocks to develop evidence-based solutions to improve vision care and rehabilitation services for people living in Africa. The voices and lived experiences of persons living with low vision on their perceived difficulties or otherwise in assessing LVCR is imperative to designing appropriate services.

When considering barriers and enablers in the African context compared to elsewhere in the world, most of the barriers identified in this scoping review were not unique to SSA countries. Therefore, the possibility of adopting strategies or adapting programmes that have been, or are currently being, implemented in non-SSA countries may help to minimise the effect of the identified barriers on LVCR services in SSA.

Lack of awareness is a global barrier which affects the practitioner, patient, and the general public. Therefore, efforts aimed at advocacy and improving awareness of low vision have the potential of minimising other barriers and therefore must be central to any programme aimed at improving access and utilisation of LVS.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Carl Halladay Abraham http://orcid.org/0000-0003-1733-3509

References

1. Burton MJ, Ramke J, Marques AP et al. The lancet global health commission the lancet global health commission on global eye health: vision beyond 2020. Lancet Glob Heal 2021; 9: e489–e551. doi:10.1016/S2214-109X(20)30488-5.
2. Bourne RRA, Steinmetz JD, Flaxman S et al. Trends in prevalence of blindness and distance and near vision impairment over 30 years: an analysis for the global burden of disease study. Lancet Glob Heal 2021; 9: e130–e143. doi:10.1016/S2214-109X(20)30425-3.
3. Leat SJ, Legge GE, Bullimore MA. What is low vision? A re-evaluation of definitions. Optom Vis Sci 1999; 76: 198–211. doi:10.1097/00006324-199904000-00023.
4. Black A, Wood J. Vision and falls. Clin Exp Optom 2005; 88: 212–222. doi:10.1111/j.1444-0938.2005.tb06699.x.
5. Schwartz S, Segal O, Barkana Y et al. The effect of cataract surgery on postural control. Invest Ophthalmol Vis Sci 2005; 46: 920. doi:10.1167/iovs.04-0543.
6. Haymes SA, Johnston AW, Heyes AD. Relationship between vision impairment and ability to perform activities of daily living. Ophthalmic Physiol Opt 2002; 22: 79–91. doi:10.1046/j.1475-1313.2002.00016.x.
7. Marengoni A, Angleman S, Melis R et al. Aging with multimorbidity: a systematic review of the literature. Ageing Res Rev 2011; 10: 430–439. doi:10.1016/j.arr.2011.03.003.
8. Nayeni M, Dang A, Mao AJ et al. Quality of life of low vision patients: a systematic review and meta-analysis. Can J Ophthalmol 2021; 56: 151–157. doi:10.1016/j.jcjo.2020.10.014.

9. Binns AM, Bunce C, Dickinson C et al. How effective is low vision service provision? A systematic review. Surv Ophthalmol 2012; 57: 34–65. doi:10.1016/j.survophthal.2011.06.006.
10. van Nispen RMA, Virgili G, Hoeben M et al. Low vision rehabilitation for better quality of life in visually impaired adults. Cochrane Database Syst Rev 2020. Epub ahead of print 27 January 2020. doi:10.1002/14651858.CD006543.pub2.
11. Chiang PP. The global mapping of low vision services. Diss. University of Melbourne; 2009. http://hdl.handle.net/11343/35343.
12. Chiang PP, O'Connor PM, Le Mesurier RT et al. A global survey of low vision service provision. Ophthalmic Epidemiol 2011; 18: 109–121. doi:10.3109/09286586.2011.560745.
13. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. Int J Soc Res Methodol Theory Pract 2005; 8: 19–32. doi:10.1080/1364557032000119616.
14. Pluye P, Nha Hong Q. The annual review of public health is online at. Annu Rev Public Heal 2014; 35: 29–45. doi:10.1146/annurev-publhealth-032013-182440.
15. Tricco AC, Lillie E, Zarin W et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med 2018; 169: 467–473. doi:10.7326/M18-0850.
16. Nyankerh CNA, Agyekum S, Boateng AK et al. Low vision service delivery by optometrists in Ghana. Int J Heal Sci Res 2019; 9: 115–119.
17. Boadi-Kusi SB, Ntodie M, Mashige KP et al. A cross-sectional survey of optometrists and optometric practices in Ghana. Clin Exp Optom 2015; 98: 473–477. doi:10.1111/cxo.12291.
18. Okoye OI, Aghaji AE, Umeh RE et al. Barriers to the provision of clinical low-vision services among ophthalmologists in Nigeria. Vis Impair Res 2007; 9: 11–17. doi:10.1080/13882350701198702.
19. Jose R, Sachdeva S. Community rehabilitation of disabled with a focus on blind persons: Indian perspective. Indian J Ophthalmol 2010; 58: 137–142. doi:10.4103/0301-4738.60086.
20. Khan SA, Shamanna B, Nuthethi R. Perceived barriers to the provision of low vision services among ophthalmologists in India. Indian J Ophthalmol 2005; 53: 69–75. doi:10.4103/0301-4738.15293.
21. Kaleem MA, West SK, Im LT et al. Referral to low vision services for glaucoma patients: referral patterns and characteristics of those who refer. J Glaucoma 2017; 26: e115–e120. doi:10.1097/IJG.0000000000000600.
22. Kaleem MA, West SK, Im L et al. Referral to low vision services for glaucoma patients: referral criteria and barriers. J Glaucoma 2018; 27: 653–655. doi:10.1097/IJG.0000000000000985.
23. Lam N, Leat SJ. Reprint of: barriers to accessing low-vision care: the patient's perspective. Can J Ophthalmol 2015; 50: S34–9. doi:10.1016/j.jcjo.2015.04.007.
24. Malkin AG, Ross NC, Chan TL et al. U.S. optometrists' reported practices and perceived barriers for low vision care for mild visual loss. Optom Vis Sci 2020; 97: 45–51. doi:10.1097/OPX.0000000000001468.
25. Sivakumar P, Vedachalam R, Kannusamy V et al. Barriers in utilisation of low vision assistive products. Eye (Lond) 2020; 34: 344–351. doi:10.1038/s41433-019-0545-5.
26. Matti AI, Pesudovs K, Daly A et al. Access to low-vision rehabilitation services: barriers and enablers. Clin Exp Optom 2011; 94: 181–186. doi:10.1111/j.1444-0938.2010.00556.x.
27. Overbury O, Wittich W. Barriers to low vision rehabilitation: the montreal barriers study. Invest Ophthalmol Visual Sci 2011; 52: 8933–8938. doi:10.1167/iovs.11-8116.
28. Pollard TL, Simpson JA, Lamoureux EL et al. Barriers to accessing low vision services. Ophthalmic Physiol Opt 2003; 23: 321–327. doi:10.1046/j.1475-1313.2003.00123.x.
29. Nia K, Markowitz SN. Provision and utilization of low-vision rehabilitation services in Toronto. Can J Ophthalmol 2007; 42: 698–702. doi:10.3129/i07-124.
30. Kaldenberg J. Low vision rehabilitation services: perceived barriers and facilitators to access for older adults with visual impairment. Br J Occup Ther 2019; 82: 466–474. doi:10.1177/0308022618821591.
31. Mcgrath C, Corrado AM. The environmental factors that influence technology adoption for older adults with age-related vision loss. Br J Occup Ther 2019; 82: 493–501. doi:10.1177/0308022618813247.
32. Southall K, Wittich W. Barriers to low vision rehabilitation: a qualitative approach. J Vis Impair Blind 2012; 106: 261–274. doi:10.1177/0145482X1210600502.
33. Smallfield S, Emmert C, Fang L et al. iPad use among older women with low vision: follow-up focus group findings iPad use among older women with low vision. Occup Ther Heal Care 2020; 37: 395–409. doi:10.1080/07380577.2020.1809048.
34. Copolillo A, Teitelman JL. Acquisition and integration of low vision assistive devices: understanding the decision-making process of older adults with low vision. Am J Occup Ther Off Publ Am Occup Ther Assoc 2005; 59: 305–313. doi:10.5014/ajot.59.3.305.
35. Kyeremeh S. The availability and accessibility of low vision services in Ashanti and Brong Ahafo regions of Ghana. University of Kwazulu-Natal; 2018.
36. Monye HI, Kyari F, Momoh R. A situational report on low vision services in tertiary hospitals in South-East Nigeria. Niger J Clin Pract 2020; 23: 919–927. doi:10.4103/njcp.njcp_375_19.
37. O'Connor PM, Mu LC, Keeffe JE et al. Access and utilization of a new low-vision rehabilitation service. Clin Experiment Ophthalmol 2008; 36: 547–552. doi:10.1111/j.1442-9071.2008.01830.x.
38. Wittich W, Canuto A, Overbury O. Overcoming barriers to low-vision rehabilitation services: improving the continuum of care. Can J Ophthalmol 2013; 48: 463–467. doi:10.1016/j.jcjo.2013.05.013.
39. Marella M, Yu M, Paudel P et al. The situation of low vision services in Papua New Guinea: an exploratory study. Clin Exp Optom 2017; 100: 54–60. doi:10.1111/cxo.12446.
40. Sarika G, Venugopal D, Sailaja MVS et al. Barriers and enablers to low vision care services in a tertiary eye care hospital: a mixed method study. Indian J Ophthalmol 2019; 67: 536–540. doi:10.4103/ijo.IJO_1215_18.
41. Jose J, Thomas J, Bhakat P et al. Awareness, knowledge, and barriers to low vision services among eye care practitioners. Oman J Ophthalmol 2016; 9: 37–43. doi:10.4103/0974-620X.176099.
42. Lam N, Leat SJ, Leung A. Low-vision service provision by optometrists: a Canadian nationwide survey. Optom Vis Sci 2015; 92: 365–374. doi:10.1097/OPX.0000000000000512.
43. Smallfield S, Lou JQ. The effectiveness of low vision rehabilitation on quality of life: an evidence-based practice approach to answer clinical questions. Occup Ther Heal Care 2006; 20: 17–30. doi:10.1080/J003v20n02_02.
44. Chiang PP, Ormsby G, Keeffe JE. Critical issues in implementing low vision care in the Asia- Pacific region community ophthalmology critical issues in implementing low vision care in the Asia-Pacific region. Indian J Ophthalmol 2012; 60: 456–459. doi:10.4103/0301-4738.100549.
45. Abraham CH, Ocansey S, Boadi-Kusi SB et al. Knowledge and practice of drivers on the provision of service to persons with visual disability: a survey of public transport drivers in a tertiary inclusion school in West Africa. Br J Vis Impair 2021; 41: 414–424. doi:10.1177/02646196211044969.
46. Gallagher BAM, Hart PM, O'Brien C et al. Mobility and access to transport issues as experienced by people with vision impairment living in urban and rural Ireland. Disabil Rehabil 2011; 33: 979–988. doi:10.3109/09638288.2010.516786.
47. Bezyak JL, Sabella SA, Gattis RH. Public transportation: an investigation of barriers for people with disabilities. J Disabil Policy Stud 2017; 28: 52–60. doi:10.1177/1044207317702070.
48. Park J, Chowdhury S. Investigating the barriers in a typical journey by public transport users with disabilities. J Transp Heal 2018; 10: 361–368. doi:10.1016/j.jth.2018.05.008.
49. Boadi-Kusi SB, Amoako-Sakyi RO, Abraham CH et al. Access to public transport to persons with visual disability: a scoping review. Bri J Vis Impair 2023. doi:10.1177/02646196231167072.
50. Fast BDK. Transportation accessibility: exploring the input of individuals who are blind to create an in-service training for bus drivers keywords bus drivers and accessibility importance of consumer feedback data analysis. 2015; 8.
51. Bittner AK, Yoshinaga PD, Wykstra SL et al. Telerehabilitation for people with low vision. Cochrane Database Syst Rev 2020; 2: CD011019. doi:10.1002/14651858.CD011019.pub3.

Appendix A. PubMed Search Strategy

#1 "vision, low"[MeSH Terms] OR ("vision"[All Fields] AND "low"[All Fields]) OR "low vision"[All Fields] OR ("low"[All Fields] AND "vision"[All Fields]) OR "moderate visual impairment"[tw] OR "moderate vision impairment" [tw] OR "severe visual impairment"[tw] OR "severe vision impairment" [tw] OR "vision loss" [tw] OR "visual loss" [tw] OR "visual disability" [tw] OR "vision disability" [tw] OR svib OR "partial sight"[tw]

#2 "barrier"[All Fields] OR "barrier s"[All Fields] OR "barriers"[All Fields] OR "Health Services Accessibility"[Mesh] OR Enablers OR "access"[All Fields] OR "accessed"[All Fields] OR "accesses"[All Fields] OR "accessibilities"[All Fields] OR "accessibility"[All Fields] OR "accessible"[All Fields] OR "accessing"[All Fields]

#3 "rehabilitant"[All Fields] OR "rehabilitants"[All Fields] OR "rehabilitate"[All Fields] OR "rehabilitated"[All Fields] OR "rehabilitates"[All Fields] OR "rehabilitating"[All Fields] OR "rehabilitation"[MeSH Terms] OR "rehabilitation"[All Fields] OR "rehabilitations"[All Fields] OR "rehabilitative"[All Fields] OR "rehabilitation"[Subheading] OR "rehabilitation's"[All Fields] OR "rehabilitational"[All Fields] OR "rehabilitator"[All Fields] OR "rehabilitators"[All Fields] OR "vision rehabilitation"[tw] OR "vision therapy "[tw] OR "visual rehabilitation"[tw] OR "low vision care"[tw] OR "low vision services"[tw] OR "moderate vision impairment"[tw]

#1 AND #2 AND #3