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Reported Perceived Barriers to Low Vision Rehabilitation Services among Ophthalmic Personnel in Ethiopia

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Abstract

Background: Low vision rehabilitation services are one of the least covered subjects in ophthalmic literatures. But, 2.2 billion people have visual impairment (VI) or blindness worldwide. Among these, 1 billion people have VI that could have been prevented or addressed.

Objective: to determine the barriers of low vision rehabilitation services in Ethiopia.

Methodology: A cross sectional descriptive survey conducted over practicing ophthalmic personnel in Ethiopia from June 1- July 30, 2020. The data was entered to Epi data manager version 4.4.1.0 and exported to SPSS version 23 for analyses. Descriptive statistics was applied for different analysis. Chi-square test was used to test association between independent and dependent variables.

Result: A total of 150(72.8%) out of 206 responded and completed. 115(76.7%) were males. Mean and standard deviation of age was 30.62±3.89 years. Among study participant's 54(36.0%) were Ophthalmologists and subspecialists, 6(4.0%) Cataract-Surgeon, 49(32.7%) Ophthalmology-Residents and 27(18%) Optometrists. The major barriers in providing low visions care includes: non-availability and expensiveness of low vision devices 136 (90.67%), lack of training 117(78%), lack of awareness 49 (32.7%) and lack of interest/motivation 38(25.3%). The perception that lack of interest/motivation is a major barrier is significantly higher [OR 3.148(1.459, 6.795)] among knowledgeable than not knowledgeable about low vision services and among those trained in Ethiopia [OR 5.062(1.345, 19.050)] than abroad. Lack of training was perceived to be a major constraint in a greater proportion of respondents who were from institution giving low vision rehabilitation [OR 4.0125

(1.471, 10.945)] than who didn't.

Conclusion and recommendation: Non-availability and expensiveness of low vision devices within the country is the most common constraint for the provision of low vision rehabilitation. It is better if Ethiopian Ministry of Health give concern for ways to provide low vision devices at all government eye care services.

Keywords: Low Vision Rehabilitation Service; Barriers; Ophthalmic Personnel; Ethiopia

Background

Visual impairment is classified as distance and near; by international classification of diseases 11(2018). Distance vision impairment is further divided into four as mild VI with visual acuity (VA) of <6/12 on the better eye, moderate VI (<6/18), severe (<6/60) and blindness (<3/60). The near visual impairment (NVI) is defined as near VA worse than N6 or M.08 with existing correction [1].

Nine out of 10 of the world's blind live in a developing country, especially Asia & Africa [2]. The causes for preventable or treatable VI include: uncorrected refractive error (URE) (123.7 million), cataract (65.2million), glaucoma (6.9 million), corneal opacities (4.2 million), diabetic retinopathy (DR) (3million) and trachoma (2million). The treatable NVI is commonly caused by unaddressed presbyopia (826 million) [3]. In developing country prevalence of distance VI is four times higher than developed regions. Unaddressed NVI are >80% in Africa but lower than 10% in developed regions [4].

The national prevalence of blindness and low vision are 1.6% and 3.7% respectively with considerable regional variations in Ethiopia [5]. In another institution based study in St. Paul hospital done by Cherinet et al, in 2019, the prevalence of low vision and blindness is 10.3% and 7.3% respectively [6].

Vision rehabilitation may begin starting from birth and continues throughout life time. The goal of low vision rehabilitation should be to maximize the visual function of individual. In doing this, the individual becomes independent and the quality of life is improved because there is enhanced visual function [7]. Low vision rehabilitation requires usually multidisciplinary team. This team include: medical, optometric, allied health (occupational therapist/physical therapist), social, educational/rehabilitative, mobility and psychological services [8].

Low vision can dramatically pose the social, psychological and economic problems on the individual patient, the community and the country at large. Low vision and blindness from cataract, DR, glaucoma and URE affect 1.58- 2.31 million people in the UK. Direct health care cost is £3.0 billion, with impatient and day care cost being £735 million and outpatient comprising £771 million. Indirect costs estimated to be £5.65 (5.12 - 6.22) billion [9,10].

Patients having vision loss was found to have 4.6 times higher risk of suffering from psychological distress compared to patients with normal vision. It was found in 49.8% of patients who had loss of vision at least in one eye while 18.3% of the controls had it. Patients with vision loss in both eyes and worse VA in the better eye are more likely to have psychological distress than patients with vision loss in one eye only and good VA in the better eye respectively [11].

Even if there are studies done about vision rehabilitation services across the world, there is no such study done in Ethiopia yet amid continuous increment in VI and blindness in Sub-Saharan Africa and Ethiopia [12]. Despite the efforts of some globally recognized individuals and institutions, coverage of low-vision rehabilitation service and the patient flow where the service is available have remained low even in developed regions [13]. The aim of this study is to explore the barriers of visual rehabilitation services among the ophthalmic personnel in all centers in Ethiopia.

Methods

The study was conducted from June 1 to July 30, 2020 at all governmental and non-governmental oph-

thalmic centers in Ethiopia. Ethiopia is one of the rapidly developing countries in sub-Saharan Africa. It is located in tropical climatic condition. It is the 2nd most populous (114.9 million) nation after Nigeria (206 million) in Africa. A cross sectional descriptive survey was conducted over practicing ophthalmic personnel in all ophthalmic centers in Ethiopia who were accessible.

Data was taken from practicing ophthalmologists, cataract surgeons, Ophthalmology residents, optometrists and ophthalmic nurses accessing by email. Initially the professionals included were identified. Those who had no internet access and complete address were excluded. Then the web-based online survey format was sent for all professionals fulfilling the inclusion criteria through email. All data were seen and filled on the semi-standard questionnaire by the volunteer professionals working at all centers. A reminder mail was sent and phone called after 4, 5 and 6 weeks for those who didn't respond to the first mail. The data recorded by all volunteered professionals include: socio-demographic data, place of work, involvement in low vision practice, awareness about low vision rehabilitation, awareness and involvement in vision 2020 activities, WHO criteria for diagnosis of low vision patients, availability of LVDs at their center and their opinion about inclusion of low vision care in the training program. Data collection terminated when the calculated sample size was reached (152). All the responses were collected into the Gmail drive and accessible to the investigators at any point of time. The email was supplied from sinbonageleta@gmail.com from Jimma University Medical Center.

Operational definitions and definition of terms

Ophthalmic personnel: the professionals working either as ophthalmologists (general, sub-specialty), Ophthalmology residents, Optometrists (BSc, MSc) or Ophthalmic nurses (Diploma, BSc).

Low vision patient: one who has impairment of visual functioning even after treatment and/or standard refractive correction and has a visual acuity of less than 6/18 to LP or a visual field of < 10° from the point of fixation but uses or potentially able to use the vision for the planning and/or execution of tasks.

Low-vision devices: Appliances, aids or methods/techniques (optical and non-optical) which help low-vision patients to maximize visual potential or for maximal use of the residual vision.

Low vision rehabilitation service: a care given for patients with low vision by the use of low vision devices, training the effective use of the residual vision and advice about the environment and orientation/mobility skills to enhance and promote the patient's social, vocational and educational activities.

Validating Methods

Knowledgeable: proper answer for at least 3 of the following 5 parameters [14].

You consider a person as having low vision based on: WHO criteria

As to you the criteria for low vision includes: Visual acuity OR visual field

You consider a person is having low vision by VA if < 6/18

You consider a person is having low vision by visual field if < 10 degree

What is low vision rehabilitation? >/=3 options

Awareness: The personnel are aware if responded correctly for 5 or more of the following 8 parameters [15].

1. Have you heard about low vision? yes

2. Do you know about the availability of low vision devices? yes

3. Are you aware of WHO definition of low vision of low vision? Yes

4. Do you know any organization providing low vision rehabilitation? Yes

5. Are you aware of vision 2020? Yes

6. Low vision has not been identified as priority in vision 2020. no

7. Are you involved in vision 2020? Yes

8. Are you aware of concessions for low vision patients? Yes

Data Processing and Statistical Analysis

Data was entered using epidata version 4.4.1.0 and exported to SPSS version 23.0 to perform statistical tests. Descriptive statistics like means, proportions and frequency tables were applied for the analysis of relevant socio-demographic characteristic. The categorical variables were analyzed by using the Chi-square test to test association with the dependent variables.

Results

A total of 152 out of 206 practitioners agreed to respond making a response rate of 72.8%. Two participants didn't complete the questionnaire well and therefore not included in the analysis. 115 (76.7%) of the participants were males. The mean age of the respondents was 30.62 years. Residents on training comprised of 32.7% while 36.0% were ophthalmologists and subspecialists and 18% optometrists.

Among respondents, 88% were working at teaching government hospitals while the remaining 12 % were working in private centers and NGOs. Regarding their level of experience, 112(74.7%) respondents had less than five years of experience. Total of 94.7% of the participants noted that their primary site of activity to be on patient's eye examination with or without training eye care personnel, low vision rehabilitation and community eye health and 19 (12.7%) of them practice on low vision rehabilitation. See table 1 below.

Table 1: Socio-demographic data of respondents

Independent variables	Category	Number(N)	Percent (%)
Age	(Mean±SD)	30.62±3.89	
	(Minimum,Maximum)	(23,45)	
	≤30 Years	97	64.7
	>30 Years	53	35.3
Sex	Female	35	23.3
	Male	115	76.7
Qualifications	Seniors[1]	54	36.0
	Ophthalmology residents	49	32.7
	Others[2]	47	31.3
Experience	≤5 Years	112	74.7
	>5 Years	38	25.3
Organization where practicing	Governmental	132	88.0
	Non-governmental	18	12.0
Over all knowledge status about low vision(Score of ≥3 out of 5 score	Knowledgeable	104	69.3
	Not knowledgeable	46	30.7
Over all awarenessStatus low vision(score of ≥5 out of 8)	Aware	134	89.3
	Not aware	16	10.7
Place of training	Ethiopia	140	93.3

	Foreign	10	6.7
Primary area of activity	Patient's eye examination (Yes)	142	94.7
	Training eye care personnel(Yes)	72	48.0
	Community eye health/prevention of blindness(Yes)	52	34.7
	Low vision rehabilitation services((Yes)	19	12.7
	Others	5	3.3

[1]= Ophthalmologists 49 and 5 Ophthalmology sub-specialists

[2] = Others (20 BSc in Optometry, 7 MSc in Optometry, 6 cataract surgeons, 3 opticians, 11 Ophthalmic-Nurses)

All of the respondents (100%) had heard about low vision service. 135 (90%) respondents knew about the existence of low-vision devices. Regarding the level of involvement in low vision practice, only 19(12.7%) of them were involved in varying levels/scopes of low-vision practice.

Regarding their level of involvement in Vision 2020 activities, ninety-four (62.7%) participants had been involved in vision 2020 activities. Majority of the respondents (98.7%) were aware of WHO definition of low vision. Generally, 89.3% of the participants have good awareness (Table 1 above).

Ninety-nine (66%) of the respondents defined low vision rehabilitation as training to use low vision devices, mobility training and adaptive training for job, while 14.7% replied training to use low vision devices.

Ninety-one (60.7%) of the practitioners considered a person is having low vision when the VA in the better eye is less than 6/18. In terms of VF, eighty (53.3%) of the participants considered a person is having low vision when the VF from the point of fixation is less than 10°. Twenty-three (15.3%) respondents were not sure. From all participants 69.3% of them are knowledgeable about low vision (Table 1).

From all participants, 87.4% mentioned retinal problems, post cataract extraction, glaucoma and RE as a cause of low vision (See figure1).

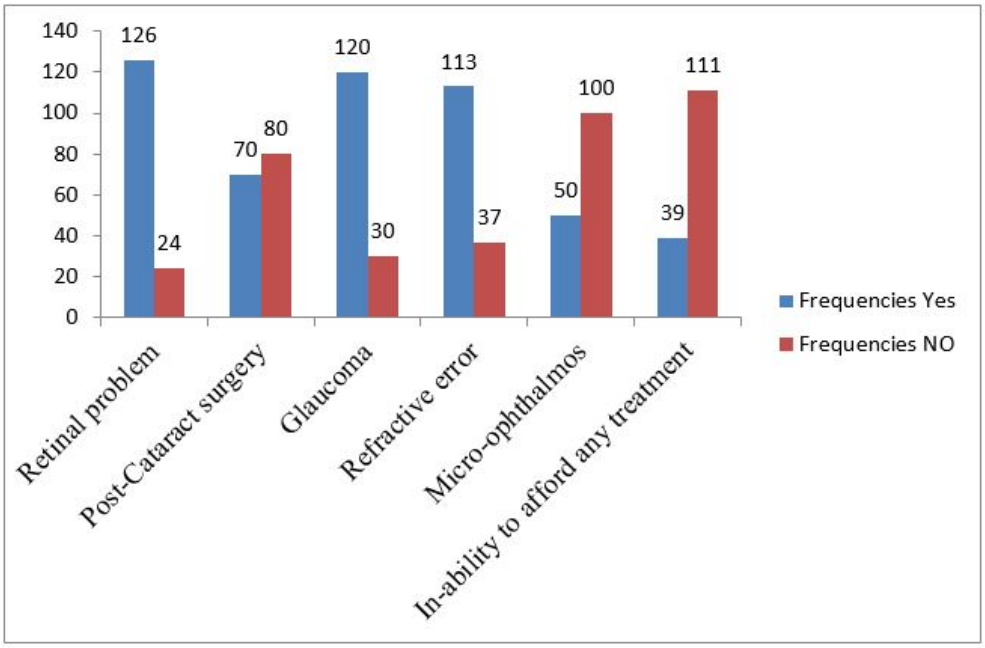

Figure 1: Common causes of low vision that ophthalmic personnel faced while giving eye care services

Responses related to the perceived barriers to the provision of low-vision service for the ophthalmic personnel are illustrated in (Table 2). Non-availability of low-vision devices and expensiveness of low vision device within the country (n =136; 90.67%) and lack of training in low-vision practice (n =117; 78%) were the main barriers.

Table 2: Major barriers faced in providing low vision care (of the ophthalmic personnel)

Variables for barrier	Number(N)	Percent(%)
Non-availability and expensiveness of low vision device	136	90.67
Lack of training	117	78.0
Lack of awareness	49	32.7
Lack of interest/motivation	38	25.3
More work load and lack of man power	34	22.67
Less profitability and time consumption of low vision care	28	18.67
Difficulty in satisfying patients and non-effectiveness of low vision care	18	12

On the way of improving low vision practices, majority of the respondents were in support of creating public awareness and creating awareness among practitioners representing 85.3% and 84% of the respondents respectively. See table 3 below.

Table 3: Improving low vision practices

Practices	Frequency	Percent
Improving the availability oflow vision devices	134	89.3
Creating public awareness	128	85.3
Creating awareness among practitioners	126	84.0
Availability of Low vision devices at low cost:	124	82.7
More training programs	121	80.7
Including Low vision as a part of curriculum	116	77.3

Table 4: Significant factors associated with barriers of ophthalmic personnel in providing low vision care

Independent variable associated with the barrier	Category Of independent variable	Major barrier Ophthalmology personnel face		Odd ratio(95%CI)	P-Value
		1.Lack of awareness			
		Yes	No		
Knowledge status	Knowledgeable	77	27	2.614(1.265-5.402)	0.009
	Not knowledgeable	24	22		
		2.Lack of training			
		Yes	No		
Low vision rehabilitation services	Yes	9	10	2.614 (1.471, 10.945)	0.007

	No	24	107		
		3. Lack of interest/motivation			
		Yes	No		
Age	≤30	67	30	2.519(1.059, 5.991)	0.037
	>30	45	8		
Sex	Female	19	16	3.560(1.582, 8.012)	0.002
	Male	93	22		
Organization where working	Governmental	103	29	3.552 (1.291, 9.768)	0.014
	None governmental	9	9		
Over all knowledge status about low vision(Score of ≥3 out of 5 score	knowledgeable	85	19	3.148(1.459, 6.795)	0.003
	Not knowledgeable	27	19		
Place where the training is obtained/being obtained	Ethiopia	108	32	5.062(1.345, 19.050)	0.016
	Foreign	4	6		
		4.More work load and lack of man power			
		Yes	No		
Sex of participants	Female	18	17	5.444(2.352, 12.603)	<0.001
	Male	98	17		
		5.Non-availability and expensiveness of low vision device			
		Yes	No		
Experience(years) for participants	≤5Years	7	105	3.387 (1.103, 10.398)	0.033
	>5Years	7	31		
		6.Difficulty in satisfying patients and non-effectiveness of low vision care			
		Yes	No		
Organization where working	Governmental	111	21	3.364 (1.170, 9.672)	0.024
	None governmental	11	7		
		7.Less profitability and time consumption of low vision care			
		Yes	No		
Organization where working	Governmental	120	12	5.0 (1.590, 15.722)	0.006
	None governmental	12	6		

The likelihood of belief that LVRS is less profitable and consumes time is significantly higher [OR 5.0 (1.590, 15.722)] among the ophthalmic personnel practicing at governmental organization than those practicing at non-governmental organization.

The likelihood of responding that lack of awareness as the main constraint/ barrier was greater for those who were knowledgeable about low vision rehabilitation

[OR 2.614(1.265-5.402)] than not. Lack of training was perceived to be a major constraint for the provision of low vision rehabilitation in a greater proportion of respondents who were from institution giving low vision rehabilitation [OR 4.0125 (1.471, 10.945)] than who didn't.

From the univariate analysis, factors such as age (> 30 years, p=0.037), sex (male, p= 0.002) and type of organization (government hospital, P=0.024) were significant for the constraint that lack of interest/ motivation is the major constraint for the provision of low vision rehabilitation service.

Discussion

A good response rate was achieved in this national survey (72.8%) compared to 65% which was achieved in global survey on low vision service provision from 2011 [16].

This study demonstrated that Non-availability and expensiveness of low vision devices within the country (n =136; 90.67%) as a greatest constraint for application of low vision rehabilitation services. Similarly, non-availability of low-vision devices was cited by 88% of respondents as a barrier in a study done in Nigeria [17]. It was also found to be a significant factor among Indian ophthalmologists (72.2%) which is far less than this study. This shows that non-availability and expensiveness of low vision devices are significant problems in Africa because there is no local production of low vision devices or few if there at all. On another way, only 5.9% (2/34) of participants identified cost as a reason for not obtaining LVS in Spafford et al', study done in 2013 at Canada [18]. The possible reason for the difference could be due to the difference in the setup of the research areas because it was done in America where the instruments are readily available and the community living there had better socio-economic status than our setup. The perceived non-availability of low-vision devices in Ethiopia may be a strong indicator to the fact that they are not presently aware that low-vision devices from the Vision 2020 Low-Vision Resource Center of the Hong Kong Society for the Blind are being imported into the country and that most of the simple devices can be produced locally using indigenously available materials and appropriate technology. The prescribing culture of those ophthalmic personnel giving low vision rehabilitation services and the consuming culture of the patients with low vision (end users) could play a role in changing the perception of the non-availability of low-vision devices as a barrier to the provision of low-vision rehabilitation services.

Lack of training in low-vision practice (n =117; 78%) and lack of awareness (n= 49, 32.7%) were noted to be the barriers. This has proximity with a study conducted among ophthalmologists in India demonstrating comparable figure (82.3%) responding a lack of training as the major constraints to provide low-vision rehabilitation service but 74.7% of the respondents (more than twice in this study) responded a lack of awareness as one of the major constraints to provide low-vision rehabilitation service [17]. Lack of training was also reported by 73.5% of respondents (which was also near to this study) from a survey in Nigeria in 2007 by Okoye et al but lack of awareness of the professional was two times higher from the study at Nigeria (60.2%) [13]. Lack of public awareness (60.2%) was one of the major barriers in Nigeria, slightly lower than this study (83.3%). The majority of the study participants were aware of vision rehabilitation services (54%) in a study done by Overbury in 2011 at Montreal, Canada, slightly higher than in this study [19].

Low vision services are rarely given in Ethiopia as it is understandable from the report that only 19(12.7%) of the participants were involved in varying levels/scopes of low-vision practice. The result of a Global Survey of Low Vision Service Provision in 2011 was also similar with this finding indicating that most of the African region had either no services, very low/poor coverage or no information could be obtained. Therefore, it is very important to find ways to include low vision services as part of different ophthalmic curricula. Effort has to be made at different level of medical education to sensitize and increase interest of the medical community to low vision services and to train them to make the appropriate diagnosis and referrals.

More work load with general ophthalmic practice and lack of man power was also mentioned by 34(22.66%) of the respondents as a constraint. Busy in providing general ophthalmology services (44.3%) was reported by Indian

ophthalmologists [17]. This figure is twice the figure reported in this study. Busy in providing general ophthalmology services (56.6%) was even higher in the study done in Nigeria among the ophthalmologists in 2007 by Okoye et al. The possible reason for the difference could be the time of the research which was done 15 years back when there was little number of ophthalmologists and other ophthalmic personnel. The participants of this research were ophthalmologists who were obviously busy with general ophthalmic activities than low vision rehabilitation [13]. The vital complementary roles of the optometrists and other allied eye-care staff should be considered in addressing this perceived barrier. These categories of worker are more likely to devote more time to low-vision care if properly trained.

Lack of interest/ motivation was reported by 25.3% of the respondents. This finding was reported to be slightly higher (42.2%) in a study done by Okoye et al in 2007 among ophthalmologists in Nigeria. Lack of motivation was reported by 54.4% of the participants in a study done in India by Khan SA et al in 2005. This variation might have come from high burden of low vision with low/no low vision rehabilitation service in Ethiopia resulting in higher level of interest and motivation among ophthalmic personnel.

Conclusion and Recommendation

Non-availability and expensiveness of low vision devices, lack of training, lack of awareness, more work load and lack of man power were noted to be the main barriers among eye care practitioners. Majority of the respondents were in support of creating public awareness and creating awareness among practitioners. The perception that lack of interest/motivation as a major barrier in providing low vision rehabilitation is significantly higher among those who were knowledgeable than not knowledgeable about low vision services and among those trained in Ethiopia than abroad.

Recommendation

Ophthalmologists and other eye care staffs need to get adequate training in low vision by different ophthalmic societies like ophthalmic society of Ethiopia or NGOs working with them. The concept of low-vision care should be given more attention in the curricula of the ophthalmology residency program and even the undergraduate medical education and in curriculum of other eye care personnel by Ethiopia ministry of education being with Ethiopia ministry of health. Low vision care education / awareness campaigns should be formulated properly targeting the public and eye--care providers. Local production/manufacture of low vision device from easily available ingredients should be encouraged.

Limitations and strength of the study

Strengths

First study conducted in Ethiopia

The potential limitations

The low response rate is an issue in the web-based questionnaire. We tried to improve the response rate by using hard copy of the questionnaire for the participants lacking internet access and not interested in web-based survey. Email re-sent three times to those who didn't respond within the first two weeks.

Declarations

Ethics approval and consent to participate

The research has been performed in accordance with the Declaration of Helsinki. Ethical clearance & approval was obtained from Institutional Review Board of Jimma University. The committee members include Mubarek Abera < abmubarek@gmail.com and Netsanet Workneh < konetsanet@gmail.com. All participants gave written informed consent to participate in the study. Written informed consent was included in the web-based questionnaire.

Confidentiality of the participants was kept.

1. Name avoided from the data.

2. Data used only for this research purpose

3. Data kept in a well secured manner.

Consent for publication

Written informed consent for publication was obtained.

Availability of Data and Materials

All data generated or analyzed during this study are included in this published article [and its supplementary information files].

Competing interests

There is no competing interest.

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Authors' Contributions

The corresponding author has planned, supervised, analyzed and written the manuscript. The co-authors also participated on the planning and analysis of the manuscript.

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