Original Article

Seven-year experience in a low vision rehabilitation clinic at a tertiary referral center

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ABSTRACT

Background: Low vision is a major public health concern worldwide. This study was aimed at describing the characteristics of patients who had visited a low-vision rehabilitation clinic.

Methods: In this retrospective study, we reviewed the medical records of patients with low vision attending a low-vision rehabilitation clinic at a tertiary referral center over 7 years. Inclusion criteria were a diagnosis of vision impairment and availability of complete records. We extracted the following data from each record: age, sex, education level, employment status, chief complaints concerning vision, associated ocular diseases, uncorrected distance and near visual acuities, best-corrected distance and near visual acuities, statuses of previous and current prescribed optical devices, and cooperation status of patients during the optometric examination.

Results: We enrolled a total of 567 patients, including 338 (59.6%) men and 229 (40.4%) women, with a mean (standard deviation) age of 40.46 (28.34) years. Most (98.4%) participants were cooperative, with a high rate of unemployment (90.5%) and low education level. Half (49.2%) of the patients had moderate visual impairment. Retinal pathologies, mainly congenital (28.4%), and age-related macular degeneration (ARMD; 26.5%) were common causes of low vision. Difficulty in reading was the most frequent complaint (22.9%), and a combination of difficulties in reading, writing, and facial recognition was recorded in 54.7% of the patients. Other functional complaints were reported by at least 5% of the patients. Our multivariate logistic regression analysis revealed that the likelihood of difficulties in performing in-house activities, reading, facial recognition and social interaction, and driving increased per 10-year increment in age, with odds ratios of 1.39, 1.31, 1.24, and 1.22, respectively (all $P < 0.05$). The likelihood of reporting three complaints (reading, writing, and facial recognition together) increased per 0.1-logarithm of the minimum angle of resolution increment in the best-corrected distance visual acuity of the better eye, with an odds ratio of 2.05 ($P < 0.05$). In addition, men were more likely to experience difficulties in driving and reading, while women were more likely to experience difficulties in facial recognition and social interaction or in-house activities (all $P < 0.05$). Optical devices for distance or near vision were prescribed to most patients.

Conclusions: Most patients were men and unemployed. The most common category of low vision was moderate impairment. Retinal conditions, mainly congenital ones and ARMD, were the most frequent causes. A combination of difficulties in reading, writing, and facial recognition was the most common complaint. Optometrists should address these findings during rehabilitation therapy to treat patients with low vision.

KEYWORDS

low vision, tertiary referral center, visual aids, visual disorders, patient cooperation, outpatient, age distributions, legal blindness, optometries

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INTRODUCTION

Vision impairment (VI) is a major global public health concern, with unequal distributions between the two sexes, across age groups, and among World Health Organization (WHO) regions [1, 2]. Its severity is categorized by the International Classification of Diseases (ICD-11)—for mortality and morbidity statistics (recommended by the WHO)—into six categories considering distance vision in the better eye with the best possible lens correction [3].

Knowledge of the primary causes of VI is important [4, 5] owing to potential regional differences [6]. Moreover, individuals seeking outpatient low-vision services for low-vision rehabilitation may have different rehabilitative needs imposed by their functional goals [7]. Knowing the causes of VI and blindness and their functional impacts would facilitate vigilant management, beneficial programming, and prioritizing potential interventions [8].

VI leads to employment difficulties. The likelihood of employment is related to age, sex, marital status, and education level [9]. Low-vision aids (LVAs), including optical and non-optical electronic devices, are effective in vision rehabilitation [10, 11]. Low-vision rehabilitation has provided significant and meaningful assistance to patients with VI in most situations [12], effectively enhancing their functional capabilities [11, 12].

This study was aimed at describing the characteristics of patients attending a low-vision rehabilitation clinic over a period of 7 years.

METHODS

In this retrospective cross-sectional study, we reviewed the medical records of patients with low vision attending a low-vision rehabilitation clinic at a tertiary referral center in Tehran, Iran, from March 20, 2012, to March 20, 2019. The study protocol received ethical approval at the departmental level. The study procedures complied with the tenets of the Declaration of Helsinki. All patients, whether adults or parents/legal guardians of children, visiting the low-vision rehabilitation clinic provided consent to undergo all tests and access medical records. We ensured confidentiality of the information during data gathering by excluding names as identification from the data collection form. After data collection, the patients' charts were returned to the Medical Records archive at the clinic.

We retrospectively reviewed medical records over 7 years. Inclusion criteria were a diagnosis of VI [3] and availability of complete records. The following data were extracted from the patients' medical records: age, sex, education level [13], employment status [14], chief complaints concerning vision [7], associated ocular diseases [4-6], uncorrected distance and near visual acuities, best-corrected distance and near visual acuities, refraction profile, statuses of previous and current prescribed optical devices, and cooperation status of patients during the optometric examination.

All patients underwent thorough history-taking and examination by an expert optometrist (A.R.) at the clinic, who is a low-vision rehabilitation practitioner. Data collected from a brief initial interview included basic demographic data; medical, ocular, familial, surgical, and drug histories; associated ocular diseases in the referral letter verified with detailed examination; and all aforementioned data (concerning data extracted from each record). The pupils were evaluated for direct and consensual responses and relative afferent pupillary defect [15]. Detailed anterior- and posterior-segment examinations were performed [16] under a slit-lamp microscope (Topcon Corporation, Tokyo, Japan; Neitz Instruments Company, LTD, Tokyo, Japan) using auxiliary lenses.

Uncorrected and best-corrected distance visual acuities were tested using a tumbling "E" logarithm of the minimum angle of resolution (logMAR) chart set at 3 m [17] under standardized illumination and recorded in a logMAR scoring notation. Uncorrected and best-corrected near visual acuities were tested using a customized portable logMAR word-reading card at the patient's preferred reading distance [18]. Dry and cycloplegic refractions were performed [19] using a Hein streak retinoscope (Beta 200, Heine Optotechnik, Herrsching, Germany) and refined subjectively. Subsequently, LVAs for distance and near were prescribed to meet the patient's requirements [20-22]. At the end of the assessment, the patients were judged as uncooperative or cooperative. The severity of VI was categorized according to the ICD-11 criteria recommended by the WHO [3] considering distance vision in the better eye with the best possible correction in place.

Statistical analyses were performed with IBM SPSS Statistics for Windows (version 26.0; IBM Corp., Armonk, NY, USA). Categorical variables are expressed as frequency (percentage). Numerical variables are expressed as mean (standard deviation [SD]). Two independent proportion tests (chi-square test of independence) were used to compare the results between the two sexes. Multiple logistic regression was used to determine the independent relevance of age, sex, and best-corrected distance visual acuity of the better eye in the type of chief complaint concerning vision. *P*-values < 0.05 were considered to indicated statistical significance.

RESULTS

We enrolled 567 patients, including 338 (59.6%) men and 229 (40.4%) women, with a mean (SD) age of 40.46 (28.34) years. Most (98.4%) participants were cooperative, with high rates of unemployment (90.5%) and low education level (Table 1).

Table 2 shows categorization of VI based on the better seeing eye that was comparable between the two sexes (all $P > 0.05$). Overall, 439 (77.4%) and 128 (22.6%) patients had VI and blindness, respectively. Half (49.2%) of the patients had moderate VI (Table 2). Table 3 shows the age distribution of patients with low vision. The frequency was comparable between the two sexes in all age groups (all $P > 0.05$), except in the age group ≥ 80 years, in which men outnumbered women ($P < 0.05$). Many (34.6%) patients were ≤ 19 years of age (Table 3).

Table 4 shows causes of vision loss in referred patients with low vision. Retinal conditions, mainly congenital ones; age-related macular degeneration (ARMD); diabetic eye disease; retinitis pigmentosa; glaucoma; corneal opacity; uncorrected refractive error; and others (ocular trauma, albinism, unoperated cataract, retinopathy of prematurity, and involvement of the visual pathway) were found in 28.4%, 26.5%, 11.1%, 9.0%, 8.6%, 6.3%, 4.4%, and 5.6% of the patients, respectively (Table 4).

Table 1. Baseline characteristics of patients referred to a low-vision rehabilitation clinic over 7 years

Variable		Value
Sex (Men / Women), n (%)		338 (59.6) / 229 (40.4)
Age (y), Mean ± SD (Range)		40.46 ± 28.34 (2 – 97)
Employment status (employed/unemployed), n (%)		54 (9.5) /513 (90.5)
Cooperation status (cooperative/uncooperative), n (%)		558 (98.4) / 9 (1.6)
Education level, n (%)	**Uneducated**	134 (23.6)
	School-trained	308 (54.3)
	College-trained	125 (22.0)

Abbreviations: n, number of participants; %, percentage; y, years; SD, standard deviation.

Table 2. Category of vision impairment based on distance vision in the better eye with the best possible lens correction in patients referred to a low-vision rehabilitation clinic over 7 years

Category of VI	Total, n (%)	Men, n (%)	Women, n (%)	*P*-value
Category 1	74 (13.1)	42 (12.4)	32 (14.0)	0.580
Category 2	279 (49.2)	171 (50.6)	108 (47.2)	0.430
Category 3	86 (15.2)	55 (16.3)	31 (13.5)	0.360
Category 4	91 (16.0)	46 (13.6)	45 (19.7)	0.052
Category 5	36 (6.3)	23 (6.8)	13 (5.7)	0.600
Category 6	1 (0.2)	1 (0.3)	0 (0.0)	0.410

Abbreviations: VI, vision impairment; n, number of participants; %, percentage; logMAR, logarithm of the minimum angle of resolution. Note: *P*-value, comparison between men and women; Categories 1 – 6 are based on the International Classification of Diseases-11 for mortality and morbidity statistics [3]; Category 1, mild vision impairment; Category 2, moderate vision impairment; Category 3, severe vision impairment; Categories 4 – 6, blindness with better eye vision > +1.30 logMAR to no light perception.

Table 3. Age distribution of patients referred to a low-vision rehabilitation clinic over 7 years

Age group (years)	Total, n (%)	Men, n (%)	Women, n (%)	*P*-value
0 – 9	99 (17.5)	57 (16.9)	42 (18.3)	0.670
10 – 19	97 (17.1)	55 (16.3)	42 (18.3)	0.540
20 – 29	56 (9.9)	30 (8.9)	26 (11.4)	0.330
30 – 39	57 (10.0)	33 (9.8)	24 (10.5)	0.790
40 – 49	27 (4.8)	14 (4.1)	13 (5.7)	0.380
50 – 59	43 (7.6)	28 (8.3)	15 (6.6)	0.450
60 – 69	48 (8.5)	27 (8.0)	21 (9.2)	0.620
70 – 79	72 (12.7)	46 (13.6)	26 (11.4)	0.440
≥ 80	68 (12.0)	48 (14.2)	20 (8.7)	**0.048**

Abbreviations: y, years; n, number of participants; %, percentage. Note: *P*-value < 0.05 is shown in bold; *P*-value, comparison between men and women.

Table 4. Causes of vision loss in patients referred to a low-vision rehabilitation clinic over 7 years

Causes	Vision impairment or blindness, n (%)
Retinal causes, mainly congenital	161 (28.4)
Age-related macular degeneration	150 (26.5)
Diabetic eye disease	63 (11.1)
Retinitis pigmentosa	51 (9.0)
Glaucoma	49 (8.6)
Corneal opacity	36 (6.3)
Uncorrected refractive error	25 (4.4)
Others	32 (5.6)
Total	567 (100.0)

Abbreviations: n, number of participants; %, percentage; Others; ocular trauma, albinism, unoperated cataract, retinopathy of prematurity, and involvement of visual pathway.

Table 5. Type of chief complaints concerning vision among patients referred to a low-vision rehabilitation clinic over 7 years

Chief complaint	Total, n (%)	Men, n (%)	Women, n (%)	*P*-value
Reading	130 (22.9)	97 (28.7)	33 (14.4)	**< 0.001**
Driving	23 (4.1)	19 (5.6)	4 (1.7)	**0.020**
In-house activities	24 (4.2)	1 (0.3)	23 (10.0)	**< 0.001**
Facial recognition and social interaction	35 (6.2)	15 (4.4)	20 (8.7)	**0.036**
Watching television	8 (1.4)	3 (0.9)	5 (2.2)	0.200
Walking	24 (4.2)	14 (4.1)	10 (4.4)	0.862
Psychological complaints	1 (0.2)	1 (0.3)	0 (0.0)	0.407
Difficulties in reading, writing, and facial recognition	310 (54.7)	181 (53.6)	129 (56.3)	0.527
Identifying objects	4 (0.7)	3 (0.9)	1 (0.4)	0.483
Color deficiency	1 (0.2)	0 (0.0)	1 (0.4)	0.245
Others	7 (1.2)	4 (1.2)	3 (1.3)	0.649

Abbreviations: n, number of participants; %, percentage; Others; difficulties in deeply personal or hobby-related activities. Note: *P*-values < 0.05 are shown in bold; *P*-value, comparison between men and women.

Table 6. Associations of chief complaints in patients with low vision after adjustment for sex, age, and best-corrected distance visual acuity in the better seeing eye

Chief complaint	Men	Age (per 10 years)	BCDVA in the better eye (0.1 logMAR worse)
Reading, OR (95% CI)	**2.26 (1.43 – 3.58) ****	**1.31 (1.21 – 1.41) ****	0.61 (0.38 – 1.01)
Driving, OR (95% CI)	**3.05 (1.11 – 9.16) ***	**1.22 (1.04 – 1.44) ***	0.58 (0.199 – 1.66)
In-house-activities, OR (95% CI)	**0.02 (0.003 – 0.16) ****	**1.39 (1.17 – 1.66) ****	1.51 (0.65 – 3.49)
Facial recognition and social interaction, OR (95% CI)	**0.42 (0.21 – 0.85) ***	**1.24 (1.09 – 1.42) ***	0.42 (0.17 – 1.05)
Watching television, OR (95% CI)	0.40 (0.09 – 1.67)	1.04 (0.81 – 1.34)	0.65 (0.12 – 3.44)
Walking, OR (95% CI)	0.96 (0.42 – 2.19)	0.98 (0.85 – 1.14)	0.76 (0.30 – 1.91)
Difficulties in reading, writing, and facial recognition, OR (95% CI)	1.04 (0.71 – 1.52)	**0.72 (0.67 – 0.77) ****	**2.05 (1.34 – 3.14) ****
Identifying objects, OR (95% CI)	2.10 (0.22 – 20.41)	0.94 (0.65 – 1.35)	0.72 (0.08 – 6.85)
Others, OR (95% CI)	0.96 (0.21 – 4.38)	0.88 (0.65 – 1.18)	0.07 (0.004 – 1.16)

Abbreviations: BCDVA, best-corrected distance visual acuity; logMAR, logarithm of the minimum angle of resolution; OR, odds ratio; CI, confidence interval; Others; difficulties in deeply personal or hobby-related activities. Note: *P*-values < 0.05 are shown in bold; * *P*-value < 0.05; ** *P*-value < 0.001.

Table 7. Status of previously prescribed optical devices for patients referred to a low-vision rehabilitation clinic over 7 years

Type of optical device	Prescribed and was appropriate	Prescribed and was inappropriate	Was not prescribed
Distance spectacles, n (%)	190 (33.5)	81 (14.3)	296 (52.2)
Near spectacles, n (%)	27 (4.8)	44 (7.8)	496 (87.5)
Low-vision aids, n (%)	21 (3.7)	3 (0.5)	543 (95.8)

Abbreviations: n, number of participants; %, percentage.

Table 8. Type of prescribed optical devices for patients referred to a low-vision rehabilitation clinic over 7 years

Type of optical device		n (%)
Spectacles	**Distance spectacles (prescribed / not prescribed)**	483 (85.2) / 84 (14.8)
	Near spectacles (prescribed / not prescribed)	388 (68.4) /179 (31.6)
Low-vision aids	**Telescopes**	10 (1.8)
	Closed-circuit television	12 (2.1)
	Video magnifier	2 (0.4)
	Microscope	203 (35.8)
	Hand-held magnifier	3 (0.5)
	Stand magnifier	2 (0.4)
	Tablet	116 (20.5)
	Multiple low-vision aids	137 (24.2)
	Not prescribed	82 (14.5)

Abbreviations: n, number of participants; %, percentage.

Table 5 lists the types of chief complaints concerning vision in referred patients with low vision. Difficulty in reading was the most frequent complaint (22.9%), and a combination of difficulties in reading, writing, and facial recognition was recorded in 54.7% of the patients. Other functional complaints were reported by at least 5% of the patients. Difficulty in reading or driving was more frequently reported by men, whereas that in in-house activities or, facial recognition and social interaction was more frequently reported by women (all $P < 0.05$; Table 5).

The multivariate logistic regression analysis revealed that the likelihood of difficulties in in-house activities (odds ratio [OR], 1.39; 95% confidence interval [CI], 1.17 – 1.66), reading (OR, 1.31; 95% CI, 1.21 – 1.41), facial recognition and social interaction (OR, 1.24; 95% CI, 1.09 – 1.42), and driving (OR, 1.22; 95% CI, 1.04 – 1.44) increased per 10-year increment in age (all $P < 0.05$). The likelihood of reporting a combination of difficulties in reading, writing, and facial recognition decreased (OR, 0.72; 95% CI, 0.67 – 0.77) per 10-year increment in age and increased (OR, 2.05; 95% CI, 1.34 – 3.14) per 0.1-logMAR increment in best-corrected distance visual acuity of the better eye (both $P < 0.05$; Table 6). In addition, men were more likely to experience difficulties in driving (OR, 3.05; 95% CI, 1.11 – 9.16) and reading (OR, 2.26; 95% CI, 1.43 – 3.58), while women were more likely to experience difficulties in facial recognition and social interaction or in-house activities (all $P < 0.05$; Table 6).

Most patients had not been previously prescribed optical devices. LVAs, near spectacles, and distance spectacles were not prescribed in 95.8%, 87.5%, and 52.2% of the patients, respectively (Table 7). At our low-vision rehabilitation clinic, optical devices were prescribed whenever possible and considered appropriate to meet the patient's requirements. Distance spectacles, near spectacles, and LVAs were prescribed in 85.2%, 68.4%, and 85.5% of the patients, respectively (Table 8).

DISCUSSION

In the present study, moderate VI was the most common category, and the unemployment rate was high. Most patients were men and more likely to experience difficulties in driving and reading. Women were more likely to experience difficulties in facial recognition, social interaction, and in-house activities. The likelihood of reporting a combination of difficulties in reading, writing, and facial recognition decreased significantly per 10-year increment in age, with an OR of 0.72, and increased with 0.1-logMAR worsening in best-corrected distance visual acuity of the better eye, with an OR of 2.05. The likelihood of difficulties in in-house activities, reading, facial recognition and social interaction, and driving increased per 10-year increment in age, with ORs of 1.39, 1.31, 1.24, and 1.22, respectively.

Unemployment can affect the psychological well-being of patients with VI [23] and increased from 4% in 1994 – 1995 to 19.8% in 2011 in the United States of America [14]. Marques et al. reported an unemployment rate of 21% for working-age patients with VI in Portugal [24]. Although 34.6% (n = 196) of our participants were < 20 years of age while 33.2% (n = 188) were > 60 years of age, among patients aged 20 – 59 years (n = 183), the rate of unemployment was 80.0% (n = 146 patients), which is high. The magnitude of this problem indicates the necessity of vigilant planning to resolve employment barriers in this cohort. However, further research is required on this topic [25].

In an almost 6-year retrospective review of the clinical records of 135 patients from Jordan, Bakkar et al. [10] found that moderate VI was the most common category (n = 61, 45.2%), followed by severe VI (n = 27, 20.0%), mild VI (n = 26, 19.3%), and blindness (n = 21, 15.6%). LVAs were prescribed for near or distant in 43.7% (n = 59) of the patients [10]. In almost similar order, moderate VI was the most common category (n = 279, 49.2%), followed by severe VI (n = 86, 15.2%), blindness (n = 128, 22.6%), and mild VI (n = 74, 13.1%) over 7 years. However, we prescribed optical devices to most patients (distance spectacles, 85.2%; near spectacles, 68.4%; and LVAs, 85.5%).

Sapkota et al. [26] in a 2-year retrospective review of clinical data of 137 patients from Nepal with low vision found that most (71.5%) participants were men and < 40 years old (67.88%). Spectacles were prescribed to 78.10% of the patients. Among LVAs, they prescribed telescopes to 29.2% of the patients, handheld magnifiers to 13.1% of the patients and closed-circuit television and a stand magnifier for one patient each [26]. Similarly, in the present study, men (59.6%) outnumbered women (40.4%), and almost 55% of the patients were < 40 years old. Spectacles for distance (85.2%) and near (68.4%) were the most commonly prescribed optical devices. However, the type of prescribed LVAs differed between the two studies, as microscope (35.8%) was the most common, and 24.2% of the patients received multiple LVAs.

In Sapkota et al.'s study, the major causes of low vision in order of frequency were nystagmus, high refractive error, cataract, retinitis pigmentosa, and ARMD [26]. In a population-based cross-sectional study from Japan, Iwase et al. [27] reported that causes of bilateral or monocular low vision (n = 76 eyes), in descending order of frequency, were cataract, glaucoma, myopic macular degeneration, amblyopia, ARMD, corneal opacity, diabetic retinopathy, trauma, and others. Causes of bilateral and monocular blindness (n = 49 eyes) were myopic macular degeneration, glaucoma, trauma, retinitis pigmentosa, congenital anomaly, cataract, amblyopia, corneal opacity, optic atrophy, retinal bleeding, retinal detachment, uveitis, and others [27]. Cotter et al. reported cataract, diabetic retinopathy, and ARMD in approximately 82% of the patients with low vision. Corneal opacity, retinal disorders, and glaucoma have been detected as other common known causes [16]. We found retinal conditions, mainly congenital ones, and ARMD in approximately 55% of the patients. Diabetic eye disease, retinitis pigmentosa, glaucoma, corneal opacity, uncorrected refractive error, and other conditions (ocular trauma, albinism, unoperated cataract, retinopathy of prematurity, and involvement of visual pathway) were found in 45% of our patients. This discrepancy in the major causes of low vision is attributable to the retrospective method of data collection, as we could not recheck the specific etiology for each patient. Regional differences or different ethnic backgrounds of participants between the studies could be other possible justifications.

In a 3-year documented functional complaint of 819 new patients referred for low-vision rehabilitation, Brown et al. [7] found that the most common functional complaint was difficulty in reading, followed by difficulties in driving, using visual assistive equipment, mobility, performing in-house activities, tolerating lighting and glare, and facial recognition and social interaction. The likelihood of reading difficulties increased with an OR of 1.4 per 10-year increment but did not differ with visual acuity. Men were more likely to experience driving difficulties and difficulties linked to lighting (with an OR of 1.9 each), whereas women were more likely to experience difficulties with in-house activities, facial recognition, and social interaction. Walking difficulty was not associated with sex, age, or visual acuity [7]. In a 7-year assessment of the functional complaints of 567 new patients referred to our low-vision rehabilitation clinic, the most common functional complaint was a combination of difficulties in reading, writing, and facial recognition, followed by difficulties in reading, facial recognition and social interaction, performing in-house activities, walking, driving, watching television, identifying objects, psychological complaints, color deficiency, and others. The likelihood of reading difficulties increased per 10-year increment in age but did not differ with visual acuity. Men were more likely to experience driving and reading difficulties, whereas women were more likely to experience difficulty with in-house activities, facial recognition, or social interaction. Walking difficulty was not associated with sex, age, or visual acuity. The likelihood of difficulties in in-house activities, reading, facial recognition and social interaction, and driving increased with a 10-year increment in age. The likelihood of expressing a combination of difficulties in reading, writing, and facial recognition decreased per 10-year increment in age and increased with worsening per

0.1-logMAR in best-corrected distance visual acuity of the better eye. Shaughness et al. reported that among 90 patients with various causes of low vision, difficulty in facial recognition was the most common [28].

The present study outlined the causes of VI and their functional impact on patients with low vision over 7 years. However, owing to its retrospective design, we failed to present details of the exact causes of VI for all participants. Moreover, our population was recruited from a tertiary referral center for low vision rehabilitation; therefore, the causes of VI or blindness could not be generalized to the whole population and may differ from the real prevalence rate in our community. As this was a cross-sectional study, we could not check the effectiveness of optometric interventions in promoting patients' social or personal capabilities. Future prospective longitudinal multicenter studies addressing these limitations are required to verify our findings and provide a better outlook for policymakers in providing vigilant management, beneficial programming, or prioritizing potential interventions to help this vulnerable cohort of patients.

CONCLUSIONS

Most patients were men and unemployed. The most common category of low vision was moderate VI. A combination of difficulties in reading, writing, and facial recognition was the most common complaints. The likelihood of difficulties in in-house activities, reading, facial recognition, social interaction, and driving increased with age. The likelihood of reporting a combination of difficulties in reading, writing, and facial recognition decreased with age and increased with poorer visual acuity. Men were more likely to experience difficulties in driving and reading, while women were more likely to experience difficulties in facial recognition and social interaction or in-house activities. Most patients had no previously prescribed optical devices; however, they were prescribed whenever possible and appropriate. Optometrists should address these findings during rehabilitation therapy in patients with low vision. Future longitudinal studies in the same region could verify our findings.

ETHICAL DECLARATIONS

Ethical approval: The study protocol received ethical approval at the departmental level. The study procedures complied with the tenets of the Declaration of Helsinki. All patients, whether adults or parents/legal guardians of children, visiting the low-vision rehabilitation clinic provided consent to undergo all tests and access medical records. We ensured confidentiality of the information during data gathering by excluding names as identification from the data collection form. After data collection, the patients' charts were returned to the Medical Records archive at the clinic.

Conflict of interest: Dr. Reza Gharebagi and Dr. Fatemeh Heidary are the editors of the Medical hypothesis, discovery & innovation in optometry journal.

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