

Barriers to Low Vision Rehabilitation: The Montreal Barriers Study

Olga Overbury^{1,2,3} and Walter Wittich^{3,4,5}

PURPOSE. One objective of the Montreal Barriers Study was to examine demographic characteristics of people with vision impairment that may hinder their referral or decision to access rehabilitation services.

METHODS. Data collection was conducted in three phases, whereby during phase I, patients in ophthalmology department waiting rooms underwent a structured interview to ascertain demographic variables that may be related to their utilization of the rehabilitation process. Phase II examined variables recorded in the rehabilitation agency file of those who had made the choice to access services. Phase III examined the rehabilitation access behavior of those participants who were referred as part of phase I.

RESULTS. In phase I, 54% of the 702 participants had been referred to and received rehabilitation services. An additional 13% were aware of these services but chose not to access them, whereas 33% were unaware of their existence. The variables associated with positive access choice were education, diagnosis, race, acuity at the time of interview, and living situation. In phase II, it was found that acuity at agency intake was markedly better than at the study interview. Of the participants who were referred to rehabilitation services as part of the phase I protocol, it was found in phase III that only 56% had engaged in rehabilitation services.

CONCLUSIONS. It seems that even under ideal referral situations, there remain barriers to vision rehabilitation services that have not been specifically identified in the present study. Further research is necessary on the psychological and psychosocial contributors to this process. (*Invest Ophthalmol Vis Sci.* 2011; 52:8933–8938) DOI:10.1167/iovs.11-8116

The goal of vision rehabilitation is to enable persons who are living with permanent vision loss to lead independent, productive lives, to be integrated into their communities, and to achieve a high level of personal satisfaction with life.^{1,2} For many years, the professional field has been replete with numerous anecdotes but little research on the topic of referral to and the utilization of services for visually-impaired people. This situation has led to various assumptions that still linger today.

From the ¹School of Optometry, University of Montreal, Montreal, Quebec, Canada; ²Department of Ophthalmology, McGill University, Montreal, Quebec, Canada; ³Centre de recherche interdisciplinaire en réadaptation, Montreal, Quebec, Canada; ⁴Centre de recherche institut universitaire de gériatrie de Montréal, Université de Montréal, Montreal, Quebec, Canada; and ⁵MAB-Mackay Rehabilitation Centre, Montreal, Quebec, Canada.

Supported by the Réseau Vision of the FRSQ, the Institut Nazareth et Louis-Braille, and the MAB-Mackay Rehabilitation Centre.

Submitted for publication June 23, 2011; revised September 1, 2011; accepted October 2, 2011.

Disclosure: **O. Overbury**, None; **W. Wittich**, None

Corresponding author: Olga Overbury, School of Optometry, University of Montreal, Case postale 6128, succursale Centre-Ville, Montréal, Quebec H3C 3J7, Canada; olga.overbury@umontreal.ca.

Some of these include but are not limited to statements such as the following: “Ophthalmologists rarely refer their patients to low vision clinics or rehabilitation agencies.” “Even when they do refer, they wait until the patient has count fingers vision, which makes the rehabilitation process much more difficult than it would have been had the patient been sent earlier when vision was better.” “Most visually-impaired people would avail themselves of these services if they would only be told about them.”

Recently, some attempts have been made to examine this issue objectively for a variety of purposes. The general observation has been that, indeed, access to vision rehabilitation may be impaired by a variety of barriers. In the West Virginia Survey of Visual Health,³ economics and transportation were major culprits in this regard. Additionally, lack of knowledge about vision rehabilitation services was substantial, with only 18% of the survey sample being aware of their existence. The numbers were even more dismal in other studies carried out in various geographical locations such as Australia, India, Canada, the United Kingdom, and the Asia-Pacific rim.^{4–8} It was found that, across the board, around 5% to 10% of visually impaired individuals actually used low vision services.⁹ Chiang and colleagues¹⁰ had additionally identified barriers on a global scale. They concluded that availability, funding, and awareness form three of the core obstacles to low vision rehabilitation access. Specifically availability was largely dependent on the level of government subsidization, rarely available in developing regions, but not necessarily universally available even in developed countries such as the USA or Canada.¹¹

A Canadian study on the needs of people who are blind or visually-impaired provided substantial data concerning barriers to vision rehabilitation services.¹² Almost one third (28%) of seniors reported that they “don’t know how to find them.” The next largest number (17%) reported that services are too far away and transportation is a barrier to them. A smaller percentage (13%) stated that the services had not been suggested to them. Barriers to accessing low vision services were also identified in an Australian study.¹³ It was found that lack of referral was a major problem, as was the lack of understanding of available services by the potential clientele and by the general public.

The studies on this topic to date have various limitations. On the one hand, those using a survey approach to assess the opinions and behaviors of ophthalmologists,^{6,14–21} optometrists,^{5,22–24} or other rehabilitation professionals²⁵ suffer from the volunteer effect, in that professionals who are appropriately referring to or providing rehabilitation services are much more likely to respond. On the other hand, surveys targeting patients are hampered by the lack of any objective assessment of the individual’s visual abilities or lack thereof. To avoid these methodological pitfalls, it was decided to go where visually-impaired people could readily be found—ophthalmology department waiting rooms. The aim of this study was to determine which demographic characteristics of people with visual impairment influence ophthalmologists’ referral patterns

and/or choices of the patients themselves to seek or not to seek vision rehabilitation services. To that end, three phases are presented. The first utilizes a cross-sectional design wherein patients in ophthalmology waiting rooms were recruited and interviewed. In phase II, the files of those who had received agency services were reviewed to determine their intake acuity and referral source. Finally, in phase III, the agency files were reviewed to determine whether those who were referred by virtue of their participation actually chose to access services.

METHODS: PHASE I

Participants

Between January 2007 and October 2010, 702 individuals ranging in age from 26 to 100 were recruited into the Montreal Barriers Study. These 312 men and 390 women were visually impaired according to the Quebec Ministry of Health's criteria (i.e., best corrected visual acuity in the better eye of $<20/60$ [6/18] or a visual field of $<60^\circ$ in either the horizontal or vertical meridian), thus making them eligible for free rehabilitation services and devices in the provincial system. The inclusion criteria were that the person had to be able to understand and speak English or French, have sufficient hearing for the interview and questionnaires to be carried out orally, and be cognitively intact according to the research assistant's impression. The study participants were recruited from the ophthalmology departments of four university-affiliated hospitals in Montreal: the Sir Mortimer B. Davis Jewish General Hospital and the Royal Victoria Hospital (McGill University), as well as l'Hôpital Notre-Dame, and l'Hôpital Maisonneuve-Rosemont (University of Montreal). The study protocol followed the tenets of the Declaration of Helsinki. Ethics approval was obtained from the Institutional Review Boards of the four hospitals as well as the Research Ethics Committee of the Center for Interdisciplinary Research in Rehabilitation of Greater Montreal, the supervising research ethics board for the two agencies providing vision rehabilitation services to the visually impaired—the Institut Nazareth et Louis-Braille (INLB), and the MAB-Mackay Rehabilitation Centre (MMRC). Study participants gave written informed consent after having the purpose and procedure of the study explained to them by a research assistant.

Materials

The Montreal Barriers Study utilizes a structured demographic interview as well as standardized questionnaire measures (discussed in more detail in a different publication²⁶). The present analysis focused on the results obtained only from the demographic interview and from the client files of the INLB and MMRC (see Table 1 for a list of the specific interview items).

Procedure

The files of patients who were booked for an appointment with their ophthalmologist at any of the four hospitals were reviewed the day before a data collection session to ascertain which individuals met the definition of visual impairment according to the information contained in their chart. The files of eligible study participants were tagged and, on the following day, a research assistant recruited as many of them as possible. Potential study participants were individually approached in the waiting room and asked if they were interested in learning about the study. Those who answered affirmatively were then taken to a private room and the study purpose and protocol were explained. If the best corrected visual acuity in the better eye of the potential participant was in the range of 20/70 (6/21) to 20/100 (6/30), it was verified by the research assistant using an ETDRS (Early Treatment of Diabetic Retinopathy Study) acuity chart. In the situation that this acuity was actually 20/60 (6/18) or better, the person was thanked for his/her interest and brought back to the waiting room. Otherwise, the

best-corrected acuity in the better eye of the patients, as noted in their chart was used to classify them into the impairment categories.

RESULTS: PHASE I

The structured interview produced information on the demographic characteristics shown in Table 1. The most critical question in the interview was the following: "Has your ophthalmologist (or anyone else) ever referred you to or told you about vision rehabilitation services?" To ensure understanding of this question, the interviewer enumerated the agencies and low vision clinics in the Montreal area to which the person may have been referred or about which they may have obtained information from any source. The response to this question placed the participant in one of three groups: lack of information (Nobody told me ... I didn't know), personal negative choice (I knew but I didn't go), or personal positive choice (I knew and I went). The majority of the study participants were aware of vision rehabilitation services. Specifically, 380 people (54%) had availed themselves of the services. An additional 95 individuals (13%) knew about or were referred to the agencies but chose not to make contact. Finally, 227 (33%) had never heard of or been referred for vision rehabilitation.

Of the subject characteristics listed in Table 1, level of education was related to the level of awareness and use of services, $\chi^2_{(2,2)} = 10.8$; $P < 0.05$. The more highly educated the individual, the more likely she or he was to be aware of the existence of vision rehabilitation facilities and to use their services. One's ethno-racial background was also associated with the state of rehabilitation service awareness, $\chi^2_{(2,4)} = 24.7$; $P < 0.01$. Specifically, Blacks were significantly less aware of rehabilitation services than people of any other race. This variable has previously been discussed in a related publication.²⁶ People with a diagnosis of AMD were more likely than those in any other diagnostic category both to be aware of and to use services, $\chi^2_{(2,5)} = 30.7$; $P < 0.01$. Finally, the level of the individual's independence, as reflected by his or her living situation, was negatively related to awareness and utilization of rehabilitation opportunities, $\chi^2_{(2,2)} = 18.26$; $P < 0.01$. People who were living independently were the least likely to be in the "positive-choice" group. In addition to these demographic characteristics, the analysis revealed that individuals who had used the rehabilitation system reported to be statistically significantly longer impaired than those who were unaware of the existence of the services, $F_{(2,686)} = 7.63$; $P < 0.001$, $\eta^2 = 0.02$.

A variable that is typically inversely associated with duration of symptoms is visual acuity, meaning the more advanced the disorder, the more reduced the visual acuity. Indeed, acuity was most strongly related to the state of awareness, $\chi^2_{(2,2)} = 65.21$; $P < 0.01$. Specifically, the lower the acuity, the more likely that the individual was referred to and/or was aware of rehabilitation opportunities and the more likely that contact was made with the service provider. Figure 1 demonstrates this relationship between acuity and state of awareness at the time of the interview.

DISCUSSION: PHASE I

Whereas previous research has shown access rates between 5% and 25%, the awareness and access rates in this study appear generally higher³⁻⁸; however, this is most likely explained by the "ideal" environment in which the Montreal Barriers Study has thus far been conducted. Specifically, these data were collected from patients who, by their very location in an ophthalmology waiting room, were identified as consumers of eye care services. Secondly, two of the four hospitals

TABLE 1. Demographic Information Obtained through Structured Interview across Three Awareness Groups

Variable	Group				P
	Lack of Information (n = 227)	Negative Choice (n = 95)	Positive Choice (n = 380)	Incomplete Data (n Varies)	
Sex (M/F)	109/118	43/52	160/220		n.s.
Age in years, mean (SD)	72.6 (13.2)	74.4 (13.8)	75.2 (13.7)		n.s.
Distance from hospital in miles, mean (SD)	16.8 (31.8)	15.8 (21.4)	16.5 (62.5)		n.s.
Ethno-racial origin, n					< 0.05
White	182	87	342	1	
Black	22	4	9		
Asian	11	0	11		
Middle-Eastern	4	2	10		
Other	8	2	7		
Employment status, n					n.s.
Working	23	8	26		
Retired	167	73	301		
Not working	37	14	53		
Education, n				6	< 0.05
Primary	50	10	55		
Secondary	109	54	185		
Post-secondary	65	31	137		
Annual income, \$				186	n.s.
<10,000	16	4	22		
10-19,999	47	15	78		
20-29,999	28	7	45		
30-39,999	14	10	33		
40-49,999	12	6	20		
50-59,999	8	5	5		
60,000+	10	5	17		
Dependent on other(s)	30	20	59		
Marital status					n.s.
Married	116	44	178		
Widowed	62	32	125		
Single/divorced	49	19	77		
Living circumstances				2	< 0.01
Independent	146	54	192		
Some support	59	18	117		
Dependent	22	21	70		
Family support				2	n.s.
Supportive	206	86	346		
Not supportive	12	4	21		
Not aware	3	1	0		
Not applicable	4	4	13		
Diagnosis				190	< 0.01
AMD	55	47	163		
Diabetic retinopathy	32	11	31		
Glaucoma	42	12	45		
Retina—other	23	5	2		
Anterior segment	6	2	8		
Other	3	1	5		
Self-rating of health				5	n.s.
Poor	16	8	32		
Fair	63	23	99		
Good	110	55	180		
Excellent	36	8	67		
Level of Impairment					< 0.01
Mild (< 20/60 but > 20/200)	117	51	103		
Moderate (20/200 to < 20/400)	74	28	121		
Severe (20/400 or worse)	36	16	156		

F, female; M, male; n.s., not significant.

host their own low vision clinic with limited in-house services; therefore, most of the ophthalmologists whose patients were recruited were aware of low vision rehabilitation. Nonetheless, only 54% of their recruited patients had been referred to and chose to use rehabilitation services. It is interesting to note the 13% who knew but chose not to access services. This proportion is larger than that in a study by Matti et al.,²⁷ who reported 3% of declined rehabilitation access.

Even though the analysis of most of the demographic variables resulted in intuitively explainable outcomes, the results regarding the independent living situation were somewhat surprising. It was expected that persons living independently would be more likely to use services to maintain their status; however, the results indicated that they were in fact least likely to do so. We speculate that some of these individuals may be trying to hide their vision impairment, others may appear more

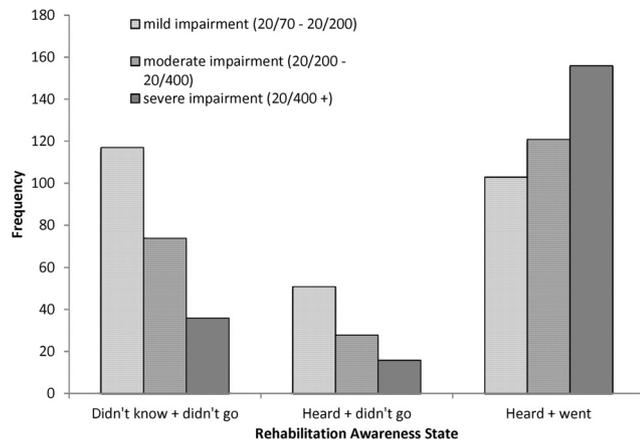


FIGURE 1. Distribution of participants in phase I across awareness states as a function of acuity impairment. Individuals with more severe impairment were more likely to have sought out rehabilitation services whereas those with mild loss were less likely to be aware of such services.

highly functional and do not elicit a referral, and yet others may be less likely to have access to transportation, given that they are living alone. Alternatively, it is possible that these individuals are indeed highly functional and have been autonomous in the development of adaptations and strategies suitable to their situation based on information from other sources, such as friends, relatives, and the media (including the internet) or from other health care professionals. Consequently, they may have had absolutely no need for vision rehabilitation services at the time of the interview.

METHODS: PHASE II

This being a cross-sectional study, it was important to ascertain the level of vision loss at the time of first contact with the rehabilitation service providers for the positive choice group. For this purpose, a follow-up of 350 agency files was conducted, of which 107 were not accessible at the agency for various reasons such as decease of the client (50; 47%), refused file access by the participant (14; 13%), participant received rehabilitation at an agency where we did not have access (17; 16%), or the files were temporarily misplaced, in use elsewhere, or not accessible (26; 24%). Data were, therefore, available for 243 individuals in the "positive-choice" group.

RESULTS AND DISCUSSION: PHASE II

Figure 2 shows the comparison of visual acuities at the time of the Montreal Barriers Study interview with the acuities at the first contact with the rehabilitation service. Clearly, the large majority (64.2%; $n = 156$) of the people who made a positive choice had a mild loss of vision when they were first referred, at least based on their visual acuity measure. Contrary to popular belief, the majority of the study participants were not referred for rehabilitation services in late stages of their vision impairment, indicating that at least some ophthalmologists referred at an appropriately early time when it has been suggested that successful rehabilitation is easier to accomplish.²⁸⁻³⁰

METHODS: PHASE III

The study protocol allowed the research team to educate participants in the lack-of-information group about vision rehabilitation services and to complete and place the necessary referral papers in their dossier

to be signed by their treating physician. From January 2007 to March 2010, the then 170 participants in the lack-of-information group received a referral in this fashion. In June of 2010, a list of their names was provided to the rehabilitation agencies to track whether these individuals had successfully found their way into the rehabilitation system, as had previously been implied in a study by Koenekoop and Gomolin.²⁰

RESULTS: PHASE III

On searching for these individuals in the client databases of both agencies, it was found that 15 of them already had an active file before the study and they were, therefore, not considered in the phase III analysis. Of the remaining sample, 89 (58%) were currently receiving low vision rehabilitation, 16 (10%) had made initial contact but either declined services or did not follow through, and 50 (32%) had never entered the rehabilitation system. The follow-up of these 50 files involved returning to the ophthalmology departments to track their referral sheets. We were not permitted to reaccess 30 because this was not covered within the ethics approval of the initial protocol at their respective hospitals. For the remaining 20 files, we were able to obtain permission. Of these, 10 contained the signed referral sheet which had not been forwarded to the agency, 5 contained an unsigned referral sheet, and 5 files did not contain the referral.

Of the 69 referrals to the INLB, 39 dossiers had been created (57%), representing a statistically significantly lower access rate in the French-speaking community when compared with the English-speaking clientele at the MMRC ($n = 66$; 77%, $\chi^2(1; n = 155) = 7.2$; $P < 0.01$). When grouping individuals by whether their dossier had been opened at either agency, none of the demographic variables differed systematically between the two groups, with the exception of living distance from the rehabilitation agency, $t_{(151)} = 3.09$; $P < 0.005$; $\eta^2 = 0.06$. Individuals who did not have an active file at either the INLB or MMRC lived statistically significantly further away.

DISCUSSION: PHASE III

Phase I indicated that 54% of participants had heard about and availed themselves of low vision rehabilitation services. Now, in phase III, under ideal referral conditions, where the awareness of rehabilitation services was guaranteed by explanation during the interview process, where the patient had expressed interest in such services, and where the referral forms had

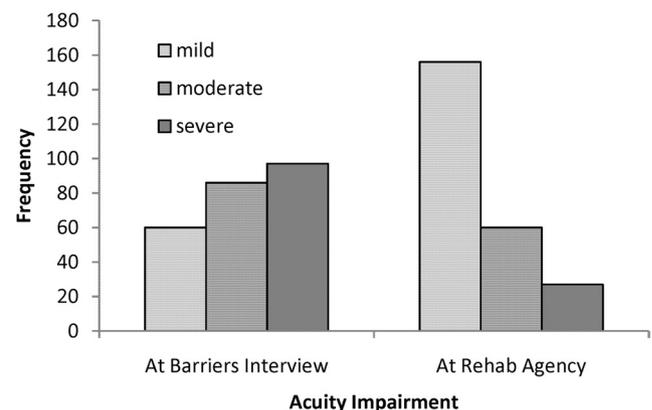


FIGURE 2. Distribution of participants in phase II at the phase I interview compared with their intake at the rehabilitation agency as a function of acuity impairment. At the time of referral, the majority of clients were only mildly impaired, indicating their appropriate early referral.

been completed without additional workload for the ophthalmologists or their staff, we observed a marginal increase to 56%. Closer examination of the files of individuals who were not found in the rehabilitation system indicated that clerical error accounted for half of referrals not forwarded, while 25% were not referred due to the negative choice of the ophthalmologist, and 25% were unaccounted.

CONCLUSIONS

To date, the Montreal Barriers Study has been conducted in what might reasonably be considered an ideal environment for patients' awareness of and doctors' referral to vision rehabilitation services. Participants were recruited in the ophthalmology departments of large, urban, university-affiliated hospitals where the patient population is generally more highly educated, middle-class, and relatively well informed about medical and related services that are available in the city. This is a limitation of the study because a significant proportion of the general public does not fall into this category. Additionally, given that two of the four hospitals that were used as interview sites have a low vision clinic on the premises, the ophthalmologists whose patients were recruited for the study were well aware of the existing local facilities as well as the two large rehabilitation centers providing comprehensive service programs. Yet, despite these "ideal conditions," only 54% of the study participants were aware of and had availed themselves of these services. Given these circumstances, it would be reasonable to suggest that the percentage would be lower elsewhere, as indicated by previous studies.^{3,9} It remains to be determined whether these findings generalize to other countries, sites, or other health care systems. The cross-sectional data at the time of the interview indicated possible bias in referral patterns favoring more educated patients with a fairly advanced form of AMD. However, in phase II, it was found that at the time of first contact with the agency the majority of participants had only a mild acuity restriction.

A counterintuitive finding was that individuals living independently were least likely to be referred and to accept low vision rehabilitation. It may be possible that a fear of being considered incapable of living independently kept them from divulging any functional difficulties or, alternatively, that their seemingly high functional status deterred their ophthalmologists from suggesting that they might find assistive devices and services helpful in the management of their functional limitations. One-third of the participants indicated that they were unaware of vision rehabilitation services. They had not received a referral from their ophthalmologist and had not been otherwise informed that they were eligible to receive assistive devices, training in their use, and other interventions such as psychological counseling. The interesting finding in phase III of the study was that, even after such information was provided at the conclusion of their participation and after they were referred to a rehabilitation agency, only half of them actually followed up on the recommendation. Curiously, the other half joined the initial 13% of the study participants who were aware of or referred to rehabilitation services but chose not to make the initial contact with the agency. Clearly, there are barriers other than lack of knowledge that keep people from seeking and obtaining appropriate services. It should be made clear that, in the context of this study, financial cost is not one of these obstacles. In the province of Quebec, the low vision examination, the rehabilitation services, and the recommended assistive devices are paid for by the public health care system. Furthermore, even the cost of travel to the agency is limited to one encounter with the optometrist for the low-vision evaluation. All other services, including the initial global

assessment, are typically provided in the home of the visually impaired person.

In the Australian study,¹³ it was found that the major obstacles were lack of referral and/or understanding of available services. Some of the focus group members in that study simply did not consider themselves to be visually impaired and, therefore, not in need of services. These findings have since then been replicated by Matti et al.²⁷ and similar attitudes and reactions were noted in the Montreal Barriers Study where a number of individuals rejected the idea of seeking services from an agency with words such as "blind" or "braille" in its name.³¹ This situation is not novel, in that four decades ago this issue was raised during an evaluation of Canadian vision rehabilitation services initiated by the Canadian National Institute for the Blind.³²

In summary, the present study attempted to identify barriers to vision rehabilitation that exist in a seemingly ideal context and, at the same time, to challenge existing folklore concerning this issue. The data of phase I indicate that, even when ophthalmologists are perfectly aware of the existence of rehabilitation services, a significant portion of their eligible patients remain unaware. Secondly, even though the cross-sectional data of phase I seemed to indicate that referrals were typically made late in the disease process, closer investigation of agency files in phase II showed that most patients who had been referred first arrived with only mild acuity loss. Furthermore, in phase II, it was found that ophthalmologists who refer their patients regularly also refer appropriately, that is, early in the disease process. Typically, those who refer at a later stage are those who only refer sporadically. Finally, there is a general belief among rehabilitation-related professionals that, if visually impaired individuals were aware of these services, they would indeed use them. Phase III of our study indicates that, even with full knowledge of the services and ideal referral conditions, only 56% actually entered the rehabilitation process. It stands to reason that other factors such as psychosocial or psychological characteristics may also play a significant role in the decision-making process of the individual.

One aspect that should be examined in more detail in this context is whether sufficient evidence exists concerning the effectiveness of vision rehabilitation services. Historically, this kind of information has been scarce or completely not existent. In recent years, a randomized clinical trial carried out within the Veterans Affairs (VA) rehabilitation system demonstrated improvement in all aspects of visual function in individuals who participated in a rehabilitation program.^{33,34} Equally strong evidence outside of the VA system has yet to be amassed. If there were indeed such a pool of evidence, ophthalmologists and other eye care professionals might be more inclined to refer, and patients might be more likely to access proven successful services, as they are in other domains, such as physical or stroke therapy settings.

References

1. Kelch J. Coping with the dark side: the psychosocial implications of sudden vision loss due to trauma. *Topics in Emergency Medicine. Topics in Emergency Medicine.* 2000;22:9-13.
2. Lauerman JF. Vision rehabilitation: new views on low vision. *Hippocrates.* 2000;14:1-8.
3. Walter C, Althouse R, Humble H, Leys MJ, Odom JV. West Virginia survey of visual health: low vision and barriers to access. *Visual Impairment Research.* 2004;6:53-71.
4. Culham LE, Ryan B, Jackson AJ, et al. Low vision services for vision rehabilitation in the United Kingdom. *Br J Ophthalmol.* 2002;86:743-747.
5. Lovie-Kitchin J. Low vision services in Australia. *J Vis Impair Blind.* 1990;84:298-304.

6. 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.
7. Gresset J, Baumgarten M. Prevalence of visual impairment and utilization of rehabilitation services in the visually impaired elderly population of Quebec. *Optom Vis Sci*. 2002;79:416-423.
8. World Health Organization. *Asia Pacific Regional Low Vision Workshop - Hong Kong 28-30 May 2001*. Geneva: World Health Organization; 2002.
9. Pascolini D, Mariotti SP, Pokharel GP, et al. 2002 global update of available data on visual impairment: a compilation of population-based prevalence studies. *Ophthalmic Epidemiol*. 2004;11:67-115.
10. Chiang PP, O'Connor PM, Le Mesurier RT, Keeffe JE. A global survey of low vision service provision. *Ophthalmic Epidemiol*. 2011;18:109-121.
11. Chiang PP, Xie J, Keeffe JE. Identifying the critical success factors in the coverage of low vision services using the classification analysis and regression tree methodology. *Invest Ophthalmol Vis Sci*. 2011;52:2790-2795.
12. CNIB. *VOICE in health policy: the impact of health policy gaps on low vision services in Canada*. Toronto: CNIB; 2005.
13. Pollard TL, Simpson JA, Lamoureux EL, Keeffe JE. Barriers to accessing low vision services. *Ophthalmic Physiol Opt*. 2003;23:321-327.
14. Adam R, Pickering D. Where are all the clients? Barriers to referral for low vision rehabilitation. *Visual Impairment Research*. 2007;9:45-50.
15. Overbury O, Jackson WB, Santangelo M. Canadian ophthalmologists and low vision: a national survey. *Can J Ophthalmol*. 1987;22:29-31.
16. Keeffe JE, Lovie-Kitchin JE, Taylor HR. Referral to low vision services by ophthalmologists. *Aust N Z J Ophthalmol*. 1996;24:207-214.
17. Cruysberg JK, van Rens GHMB. Implementation of an evidence-based guideline for the referral of adults who are visually impaired in the Netherlands: potential barriers. *J Vis Impair Blind*. 2007;April:226-231.
18. Fletcher DC. Low vision: the physician's role in rehabilitation and referral. *Geriatrics*. 1994;49:50-53.
19. Pankow L, Luchins D. Geriatric low vision referrals by ophthalmologists in a senior health center. *J Vis Impair Blind*. 1998;92:748-754.
20. Koenekoop RK, Gomolin JE. The management of age-related macular degeneration: patterns of referral and compliance in seeking low-vision aids. *Can J Ophthalmol*. 1995;30:208-210.
21. Greenblatt S. Physicians and chronic impairment: a study of ophthalmologists' interaction with visually impaired and blind patients. *Soc Sci Med*. 1988;26:393-399.
22. Renaud J, Baudry E, Gresset J. Optometrist's attitudes towards visually impaired patients in the province of Quebec. *International Congress Series*. 2005;1282:283-287.
23. Lim HY, O'Connor PM, Keeffe JE. Low vision services provided by optometrists in Victoria, Australia. *Clin Exp Optom*. 2008;91:177-182.
24. Sundling V, Gulbrandsen P, Bragadottir R, Bakketeig LS, Jervell J, Straand J. Optometric practice in Norway: a cross-sectional nationwide study. *Acta Ophthalmol Scand*. 2007;85:671-676.
25. Spungin SJ, Ferrell KA. The role and function of the teacher of students with visual impairments. Position paper developed for the Division of Visual Impairment - Council for Exceptional Children 2006; Available at: <http://www.cecdvi.org>. Accessed June 23, 2011.
26. Mwilambwe A, Wittich W, Freeman EE. Disparities in awareness and use of low-vision rehabilitation. *Can J Ophthalmol*. 2009;44:686-691.
27. Matti AI, Pesudovs K, Daly A, Brown M, Chen CS. Access to low-vision rehabilitation services: barriers and enablers. *Clin Exp Optom*. 2011;94:181-186.
28. Ryan EB, Anas AP, Beamer M, Bajorek S. Coping with age-related vision loss in everyday reading activities. *Educational Gerontology*. 2003;29:37-54.
29. Dahlin-Ivanoff S, Sonn U. Use of assistive devices in daily activities among 85-year-olds living at home focusing especially on the visually impaired. *Disabil Rehabil*. 2004;26:1423-1430.
30. Fitzgerald RG, Ebert JN, Chambers M. Reactions to blindness: a four-year follow-up study. *Percept Mot Skills*. 1987;64:363-378.
31. Southall K, Wittich W. Barriers to vision rehabilitation: a qualitative approach. Vision 2008-9th International Conference on Low Vision, Montreal. 2008.
32. Greenland C. *Vision Canada*. Toronto: Macdonald-Downie; 1976.
33. Stelmack JA, Tang XC, Reda DJ, Rinne S, Mancil RM, Massof RW. Outcomes of the Veterans Affairs Low Vision Intervention Trial (LOVIT). *Arch Ophthalmol*. 2008;126:608-617.
34. Stelmack JA, Tang XC, Reda DJ, et al. The Veterans Affairs Low Vision Intervention Trial (LOVIT): design and methodology. *Clin Trials*. 2007;4:650-660.