DOI 10.5935/0034-7280.20150043

Life quality of low-vision elderly people: before and after hearing and speech intervention

Qualidade de vida de idosos com baixa visão adquirida: pré e pós intervenção fonoaudiológica

Mayla Myrina Bianchim Monteiro[1] , Keila Miriam Monteiro de Carvalho [2]

ABSTRACT

***Aim**: To evaluate life quality of elderly people with acquired low vision before and after hearing and speech intervention. **Methods**: This was a descriptive cross-sectional study. The study was made with 52 elderly people with acquired low vision. Two questionnaires that measures life quality were used in this study. The first was 'Low Quality of Life Vision (LVQOL)' and the second the 'National Eye Institute Visual Function Questionnaire (NEIVFQ-25)'. The study included people with more than 60 years with acquired low vision and who accepted to participate signing the consent form. The hearing and speech therapy were made into three months, one meeting a week. The questionnaires were applied in the first and last day of the intervention. **Results**: The age ranged between 60 and 91 years. The macular disorder (38%), such as age-related macular degeneration, macular hole and high myopia were the main causes of visual loss. Although the tests show superior performance after the intervention, there was no statistically significant difference. On the question about difficulties seeing in general, 17 participants answered that they had much more difficulty before the intervention and only 5 participants have reported having much difficulty after the intervention. **Conclusion**: The intervention trended to positive results, and after the meetings, participants showed improvements in aspects of the two questionnaires used in the study, decreasing the degree of difficulty in performing activities.*

***Keywords**: Quality of life; Low vision; Elderly; Questionnaire; Rehabilitation*

RESUMO

Objetivo: Avaliar a qualidade de vida de idosos com baixa visão adquirida antes e depois de intervenção fonoaudiológica. **Métodos**: Foi realizado um estudo descritivo e transversal. A população do estudo foi constituída por 52 idosos com baixa visão adquirida. Dois questionários que mensuram qualidade de vida foram aplicados neste estudo. O primeiro foi "*Low Quality of Life Vision*" (LVQOL) e o segundo the "*National Eye Institute Visual Function Questionnaire*" (NEIVFQ-25). Foram incluídos na pesquisa sujeitos com mais de 60 anos, portadores de baixa visão adquirida e que assinaram o Termo de Consentimento Livre e Esclarecido. A intervenção fonoaudiológica tinha duração de três encontros, um por mês. Os questionários foram aplicados no primeiro e no ultimo dia da Intervenção. **Resultados**: A idade variou entre 60 e 91 anos. A alteração macular (38%), como degeneração macular relacionada à idade, buraco macular e alta miopia foram as principais causas da perda visual. Apesar dos testes mostrarem um desempenho superior após a intervenção, não houve diferença estatisticamente significativa. Na questão sobre dificuldades de ver em geral, 17 sujeitos responderam que tinham muita dificuldade antes da intervenção, e após a intervenção somente 5 sujeitos relataram ter muita dificuldade. **Conclusão**: A intervenção tendenciou à resultados positivos, e após os três encontros, os idosos apresentaram melhoras em aspectos avaliados nos dois questionários usados no estudo, diminuindo o grau de dificuldade na realização de atividades.

Descritores: Qualidade de vida; Baixa visão; Idoso; Questionário; Reabilitação

[1] Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, SP, Brazil.
[2] Departament of Oftalmology, Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, SP, Brazil.

Study carried out at Subnormal Vison Ambulatory, Departament of Oftalmology, Hospital de Clinicas, Universidade Estadual de Campinas Campinas, SP, Brasil.

The authors declare no conflicts of interest

Received for publication 19/03/2013 - Aceito para publicação em 08/01/2014

Introduction

In the last decade, life quality related to health has become an important issue and also the need of researches regarding this issue.

Investigations of the conditions that allow life quality in old age and also the variations that the best age provides is getting great scientific and social importance and attention. Attempting to answer the apparent contradiction that exists between old age and wellbeing, or even the association between old age and diseases, researches may contribute towards understanding the aging process and the limits and attainability of human development. In addition to this, such investigations will give the possibility of creating alternatives for interventions aimed at promoting wellbeing at the best age[1].

According to the World Health Organization (WHO) [2], health is a state of complete physical, mental and social wellbeing and not merely the absence of disease. The term "quality of life" (QOL) is the subjective perception of wellbeing and wholeness. It is a broad concept affected in a complex way by a person's physical health, psychological state, level of independence, social relationships, and his or her relationship to the salient features of his or her environment[3].

There is a need on measure the results of low-vision rehabilitation to be able to discuss the case of low-vision assessment within manage care plans, to improve services offered, and to secure and enhance funding for low-vision services[4,5].

Several questionnaires were developed to measure the life quality of people with visual impairments[6]. There are non disease-specific vision-related QOL instruments that include: the National Eye Institute Visual Function Questionnaires (NEIVFQ and NEIVFQ25) and the Low Vision Quality of Life (LVQOL) described by Wolffsohn and Cochrane[7].

Most of the instruments contain measures that capture a combination of visual symptoms, visual physical function, performance and participation of the low vision elderly in daily activities. In vision rehabilitation, an instrument to specifically address restriction of participation (handicap) is necessary to add to measures of impairment such as visual acuity and subjective or objective measures of activity limitation [8].

Patient-reported outcomes (PROs) are the measurement of patients' perception of the impact of a disease and its treatment(s), which are typically reported by questionnaire. PROs are increasingly being accepted as the primary endpoints of clinical trials in health research. Therefore, it is critical that data collected by PROs are accurate and reliable, which is only possible when patients are able to understand the questions asked and select response categories that represent their status. Poorly understood questions, or underutilized rating scale categories can seriously impair the accuracy and reliability of PRO measurements[9,10].

The role of speech therapy in the rehabilitation of visually impaired elderly aims to maintain communication, both oral and written, in full use. Some studies related that there is a decrease of written communication between the effects of visual impairment.

The aim of this study was to evaluate life quality of low-vision elderly before and after Hearing and Speech Intervention.

Methods

The research was conducted through longitudinal study. The study was approved by the Committee of Ethics in Research of the Faculty of Medical Sciences, State University of Campinas under the protocol number 1041/2010.

The study was made with 52 elderly participants. The inclusion criteria were: participants over 60 years, according to the World Health Organization - WHO; acquired low vision (visual acuity equal or less than 6/18 (0.3), according to WHO); attended at Outpatient Low Vision/HC/UNICAMP (VSN-HC-UNICAMP); with no other associated disabilities and/or mental illness; subjects who participated in three meetings called Hearing and Speech´ Intervention consecutively; participants who answered both questionnaires before and after Hearing and Speech´ Intervention; Inclusion voluntary, by signing Consent Form for the period from February 2011 to June 2012 (16 months).

Two questionnaires that deal with quality of life were chosen for use in this study.

The first questionnaires was the 'Low Quality of Life Vision' (LVQOL) which contains 25 questions specifically for low vision, and evaluated sub-items for each point analyzed, for instance, the basic aspects, mobility, adaptation, reading and working. In this study, it was used a Portuguese version, which is a result of the thesis entitled "Low Vision Elderly: Causes, Functional Status, Perceptions of Constraints and Visual Rehabilitation Unit at University Hospital" by Prof. Dr. Keila M. M. de Carvalho[11], obtained in 2007. The questionnaire consists of 23 questions.

Some items from life quality questionnaire addressed to the topic of low vision, LVQOL, Low Vision Quality of Life as described by Wolffsohn and Cochrane[7], translated and subjected to changes given the local reality, were used to prepare this instrument.

The second questionnaire, the VFQ-25 is a version that reliable and valid 25-item National Eye Institute. The National Eye Institute (NEI) sponsored the development of the VFQ-25 in order to create a survey that would measure the dimensions of self-reported health of vision that are most important for people who have chronic eye diseases. Based on this goal, the study measures the influence of visual disability and visual symptoms on generic health domains such as welfare and social and emotional functioning, as well as oriented tasks related to the daily visual operation[12].

Simon et al investigated its reliability and validity in a group of Brazilian patients with different eye conditions in Minas Gerais. The version used in the 2008 study, was also used in this research[13].

When one participant arrived at the Outpatient Low Vision/HC/UNICAMP (VSN-HC-UNICAMP), he/she was invited to participate on the study. Once agreed, two questionnaires were applied and the three meetings were scheduled. At the end of the third meeting, both questionnaires were reapplied for comparison of responses.

The questionnaires were applied by the researcher. The reading of the questionnaire was made reliably for both questionnaires.

Intervention Speech was accomplished through three meetings, monthly. The meetings were conducted in groups, lasting 50 minutes.

- 1st meeting: The theme was activities of daily living. Perform activities of daily living with facilitators. In this meeting, the researcher stressed the need of the use of communication in routine tasks like grocery shopping, taking a bus, leave a note or ask someone for some information on the street. All these

activities require the use of communication, both oral and written;

- 2nd meeting: The theme was the optical and non-optical aids. If the participant had the need of prescription use, frequency of use and improved vision. The optical aids had been previously prescribed by the ophthalmologist for the subjects during the consultation at the outpatient Low Vision. However, to date the intervention, some subjects had still not managed to get the aid, or saw no need to use it. Optical aids are generally used in closely activities, especially for reading. Thus at this meeting, was necessary the use of an optical aid to perform readings.

- 3rd meeting: The theme of the meeting was reading and writing. The use, frequency, difficulty, use of optical and non optical aids to carry out the activities, the importance of continuing these activities. This meeting covered an important area of the Hearing and Speech Pathology. Reading and writing not only refers to writing code or decipher them, we must interpret and use them socially.

During the meetings, the researcher offered new options for participants conduct their daily activities, as well answered questions regarding optical and non-optical aids and reading and writing. Patients were encouraged to discuss on the issues and also share their own experiences.

Life quality was measured after the intervention to verify if it had an impact on the visual function and life quality by comparing the results obtained by the two quizzes. VEM-test was performed for question 7 and 18 and descriptive analyses was used for other data for questionnaire 1 (LVQOL).

For questionnaire 2 (VFQ-25) the average SCORE for each sub domain was calculated and the t-test was performed to observe if the treatment lead to an improvement of visual function and the communication. The difference between the measures before versus after the treatment were compared and values with interval equal to or greater than zero, were considered a confidence level of 95%. The choice of t-test was due to paired terms. The same test was applied to the check difference between the VEM before versus the intervention.

Results

Seventy-one subjects were selected to participate on the study, but only fifty-two subjects participated in all phases. The participants' age was from 60 to 91 years. Most participants were retired, and among them, 70% were retired due to visual problems. The educational level of the participants is low: 81% have primary education.

The results involving issues of Q1 - LVQOL are presented below.

The q7 sought to examine the degree of difficulty in performing some activities. Table 1 (q7) presents the comparison for conducting such activities before and after the intervention.

The statistical test showed no significant improvement after the intervention, however, by observing the table above it is possible to infer that the VEM value to each question is a little different, there was a tendency to improvement. Despite the statistics have shown that there was no significant difference before and after the intervention, it was possible to observe an improvement in the items 1-5 that the VEM decreased after speech therapy and in items 7-11, the results of VEM remained the same, showing no improvement or worsening after the

Table 1

Comparison of pre and post intervention speech: degree of difficulty performing activities of daily living (Questionnaire 1)

	Before Intervention					After Intervention				
Difficulty in some activities	A LOT (4)	MEDIA	FEW (2)	NONE (1)	VEM (PRE)	A LOT (4)	MEDIA	FEW (2)	NONE (1)	VEM (POST)
1. To see generally?	17	26	9	0	3.2	5	31	10	3	2.8
2. To use vision for long time?	22	22	8	0	3.3	9	30	7	3	2.9
3. To use the night vision at home?	23	16	14	0	3.2	12	28	6	3	3.0
4. To see with glare?	17	25	10	0	3.1	16	23	7	3	3.1
5. To see street signs?	24	18	10	0	3.3	15	26	5	3	3.1
6. To watch TV?	18	23	11	0	3.1	8	31	7	3	2.9
7. Seeing objects that move?	20	23	9	0	3.2	23	18	5	3	3.2
8. To calculate the distance between you and an object?	29	22	11	0	3.3	24	17	5	3	3.3
9. To see steps or holes in the sidewalk ?	25	18	9	0	3.3	26	16	4	3	3.3
10. To walk on the neighborhood ?	24	18	10	0	3.3	23	19	4	3	3.3
11. To cross the street with traffic?	26	17	9	0	3.3	25	17	4	3	3.3

intervention. In the question about difficulty seen in general (item 1), 17 subjects reported that they had much more difficulty before the intervention, whereas after the intervention only 5 subjects still reported such problem.

The q8 questions are about use and types of optical aids used, before and after Intervention. For better visualization, the responses to q8 are divided into two tables presented below: table 2 and table 3. Note that not all participants in the study to make use of optical aids both pre and post intervention.

Table 2

Comparison of before and after intervention speech: using optical aids (Questionnaire 1)

Use of optical aids (N=52)	Before Intervention		After Intervention	
Yes	37	61%	45	86%
No	15	39%	7	14%
Total	52	100%	52	100%

Table 3

Comparison of before and after intervention speech: types of optical aids used (Questionnaire 1)

Types of optical aids (N=52)	Before Intervention		After Intervention	
Glasses	27	52%	31	60%
Magnifying glasses	10	19%	18	35%
Others	4	8%	5	10%
Do not use	15	39%	7	14%
Total	52	100%	52	100%

*Multiple Answers

Q12 is questioned on the purpose of using the optical feature. The answers are manifold, because the subjects were free to choose more than one answer. On this issue there was also an increase of the activities for which the subjects are using their optical devices (Table 4).

For Q18 and Q19 also statistical test was used VEM. The two questions sought to know the great difficulty performing certain activities using optical aids (Table 5).

Table 4

Comparison of before and after intervention speech: intended use of the optical feature (Questionnaire 1)

Intended use of the optical feature	Before Intervention (N=37)				After Intervention (N=45)			
	YES	NO	YES	NO	YES	NO	YES	NO
To read close, yes or no?	27	10	73%	27%	36	9	80%	20%
To read	14	23	38%	62%	12	33	27%	73%
To watch tv, yes or no?	15	31	33%	67%	15	31	33%	67%
To write, yes or no?	20	17	54%	46%	34	11	76%	24%
To do manual work, yes or no?	19	18	51%	49%	30	15	67%	33%
To walk on the street, yes or no?	15	22	41%	59%	18	27	40%	60%

Table 5

Comparison of before and after intervention speech: difficulty with activities performed with optical aids (Questionnaire 1)

	Before Intervention					After Intervention				
Using optical aids, the degree of difficulty you have to (n=52)	A LOT	MEDIA	FEW	NONE	VEM(PRE)	A LOT	MEDIA	FEW	NONE	VEM (PRE)
To read large letters in newspaper?	8	13	12	4	2.68	4	26	11	4	2.67
To read text of journal or book?	11	15	8	3	2.92	7	26	8	4	2.80
To read labels for medicines?	12	15	7	3	2.97	25	10	7	3	3.27
To read letters?	12	14	8	3	2.95	23	12	7	3	3.22
To thread the needle?	16	10	8	3	3.05	26	8	8	3	3.27
To cut with scissors?	16	10	8	3	3.05	26	8	7	3	3.30
To write?	11	10	11	5	2.73	13	20	9	3	2.96
To read what you write?	11	11	12	3	2.81	11	22	9	3	2.91
To do housework?	11	11	8	7	2.70	6	23	11	3	2.71

For Q2 - VFQ-25 was also performed a comparison before and after the intervention. For a confidence level of 95% using the t test concluded that there is no difference in the results of the responses given by patients after treatment (p-value> 0.05). But there was a tendency to improvement, post intervention, the sub domain related to: vision (q20), psychological aspects (q3, q21, q22, q25), difficulties everyday (q17, q18), dependence (q20, q23, q24), peripheral vision (q10) (Table 6).

Table 6

Comparison of pre and post intervention speech: medium SCORE for sub domain of questionnaire 2

Sub domains VFQ (N=52)	Before intervention (average)	After intervention (average)	Difference pre x post	Itens num	Questions
Geral health	46	46	0	1	1
Vision	61	58	-3	1	2
Ocular pain	61	62	1	2	4,19
Closer activities	46	48	2	3	5,6,7
Far activities	42	43	1	3	8,9,14
Social aspects	39	42	3	2	11,13
Psychological aspects	53	50	-3	4	3,21,22,25
Daily life activities	56	48	-7	2	17,18
Dependency	54	50	-5	3	20,23,24
Ability to drive motor	0	0	0	2	15,16
Color vision	50	52	2	1	12
Peripheral vision	44	42	-2	1	10

The statistical analysis of the overall VFQ-25 in this study is not presented statistical variation between subdomains. Five subdomains showed statistical improvement after the intervention, and five did not. Two subdomains showed no differences before and after the intervention.

Discussion

The purpose of this study was to know if there was an improvement on life quality of those people who attended the research, after hearing and speech intervention. The impact of the eyesight loss has adverse individual and collective consequences, giving rise to psychological, social and economic problems, because implies loss of self-esteem, status in occupational restrictions and consequent income decrease[14,15].

Low-vision rehabilitation maximizes a person's residual vision, with the use of visual aids and adaptive skills, improving their ability to perform specific tasks that were previously considered difficult[16].

Macular disease (38%) such as age-related macular degeneration, macular hole and high myopia syndrome, were the related causes regarding visual loss. Similar data were found in others studies about low vision in the elderly[17].

Visual rehabilitation aims to enhance an individual's functional ability and independence, as well as maximize their use of any residual vision. Approximately 90% of visually impaired patients have sufficient residual vision to allow them to benefit from low-vision rehabilitation. At the present, there is no literature available to demonstrate which strategies are the most effective for low-vision rehabilitation. Part of the difficulty in collecting such information lies in the numerous forms of low-vision rehabilitation strategies available. Low-vision rehabilitation is becoming increasingly important in the wider community, once visual impairment affects approximately 314 million people worldwide. The number is about to rise with increased life expectancy and, therefore, more age-related visual problems are appearing.[18,19].

Recognizing that the Hearing and Speech therapist is a professional who works in the habilitation and rehabilitation of communication between people, their participation in this process for people with low vision is extremely important, considering that subjects with visual impairment need to use different means from those used for effective communication, thus enabling the continuity of social relationships, so important to life quality [20].

The difficulties presented by the elderly involves both activities near and far, showed that the visual impairment brought involvement in various activities of the daily life. This whole impact of impairment in vision entails a greater reliance of the elderly. Such dependence is closely linked to poorer mental health in the elderly with low vision or blind, as well as the loss of social life, relationships with friends and family. The visual impairment influences not only the near vision and also as far peripheral vision, leading the elderly has greater insecurity to get around or run errands. All these findings demonstrate the great impact that the visual impairment brings to life of the elderly, as well as its consequences interact, causing a vicious cycle [21].

The number of participants using optical aids increased after the intervention. As this was one of the topics discussed during the intervention, it was expected that this number actually increased and that more seniors begin to make use of the aids [17,20].

During the appointment the help was rewritten, perhaps because the participants had no questions about the help that only arise with their use. It is important that local professionals and the elderly people are able to train using their aids, since this helps in better quantitative and qualitative vision. Without doing the training, it is possible that the elderly gives up from using the aids and then becomes unused.

Moreover, during the intervention was enhanced the explanation about the use of optical aids. The researcher demonstrated how to use each aid, and stressed that training is necessary to use them correctly. Activities with reading and writing were conducted with the participants to show its effectiveness in carrying out this activity.

Question 12 asks the surveyed to consider in which activities the optical aids are used, and also a comparison of the use of optical aids before and after the intervention. For closer reading activities, write and walk down the street, the use of aids was increased after the intervention. As for the reading activities of posters, watching television and crafts, the use of optical aids has decreased.

Relate to the use of optical aids, participants have reported

that the degree of difficulty in relation to read large print in a newspaper, read a text book or newspaper, write, read what you write and do housework, has decreased. Related on how to read labels of remedies, threading the needle and cut with scissors, there was no change in the degree of difficulty after the intervention. As those activities requires more accurace of vision, then are considered more difficult to realize.

The "VFQ" evaluates both quality of life and visual function. For this reason, the option was use "VFQ" as an instrument for evaluation of elderly life quality; moreover, this questionnaire was already validated for utilization with the Brazilian population [22].

In relation to overall health, there was no significant difference before and after intervention. As for vision, psychological, everyday difficulties, dependence and peripheral vision significantly improved after the intervention.

Analyzing the answers, it was expected that the vision (with the increased use and time of optical aids using), the vision has improved and everyday life difficulties had decreased. One of the intervention goals was to introduce strategies to improve visual functionality during daily tasks so could continue to be performed by the elderly without help [17].

A dependency is a factor directly proportional. The lower the difficulty in performing activities, the less dependency is expected.

The psychological aspects showed up as a surprise satisfactory, since it is known psychological impairment of people with visual impairment acquired [23].

In the sub domains of ocular pain, near and distance activities, color vision has improved after intervention, although were not significant.

The VFQ-25 has three relevant items to mobility of people with low vision. As this issue was not addressed during the intervention, it won´t be discussed in this study. It is understood the importance of orientation mobility and to improve the life quality of elderly visually impaired, and it is known that these aspects influences its independence and autonomy [12].

The majority aspects of the two questionnaires used in the study tendency to improvement after intervention. There was no statistically significant overall improvement. We believe that this is due to the short time intervention (three sessions). But we believe that if the intervention lasted a little longer, we would have less surveyed interested to participate in the entire study.

Other professionals participated in the evaluation and prescription of optical aids, they were ophthalmologists and educator, who were in the subjects appointment at the Low Vision Clinic of UNICAMP. The subjects passing by this appointment are referred to the Visual Rehabilitation Group in another center within the UNICAMP own. There is an interdisciplinary team for Visual Rehabilitation in this center, consisting of a social worker, educator, occupational therapist, psychologist, computer science and orientation and mobility professor. Some subjects who participated in this study has also participated in Visual Rehabilitation Groups previously, others don´t.

We should also take into consideration the participation of other professionals, previously consulted, in improving the quality of life of participants in this study.

Conclusion

After three meetings of Hearing and Speech Intervention, the communication and life quality of elderly with acquired low vision had improvements in the aspects regarding the questioned items in the two questionnaires used for this research: LVQOL and VFQ-25.

Authors contributions

Both, the authors Mayla Myrina Bianchim Monteiro and Keila Miriam Monteiro de Carvalho participated in the design, analysis of results, and contributed effectively in the realization of this manuscript.

References

1. Chachamovich E, Fleck MP, Trentini C, Power M. Brazilian WHOQOL-OLD Module version: a Rasch analysis of a new instrument. Rev Saúde Pública. 2008;42(2):308-16.
2. World Health Organization. Global data on blindness: an update [internet]; 1995. Geneva: Switzerland [cited 2013 Oct 15] Available from: www.who.int/ncd/.../WHO_PBL_94.38.pdfý
3. Lamoureux EL, Pallant JF, Pesudovs K, Hassell JB, Keeffe JE. The Impact of Vision Impairment Questionnaire: an evaluation of its measurement properties using Rasch analysis. Invest Ophthalmol Vis Sci. 2006;47(11):4732-41.
4. Avis M, Bond M, Arthur A. Questioning patient satisfaction: an empirical investigation in two out-patients clinics. Soc Sci Med. 1997;44(1):85-93.
5. Nobre MI, Temporini ER, Montilha RC, Gasparetto ME, Kara-José N. [Low vision and rehabilitation: knowledge of ophthalmology residents]. Medicina (Ribeirão Preto). 2006;39(2):253-9. Portuguese.
6. Khadka J, McAlinden C, Gothwal VK, Lamoureux EL, Pesudovs K. The importance of rating scale design in the measurement of patient-reported outcomes using questionnaires or item banks. Invest Ophthalmol Vis Sci. 2012;53(7):4042-54.
7. Wolffsohn JS, Cochrane AL. Design of the low vision quality-of-life questionnaire (LVQOL) and measuring the outcome of low-vision rehabilitation. Am J Ophthalmol. 2000;130(6):793-802.
8. Wright SE, McCarty CA, Burgess M, Keeffe JE. Vision impairment and handicap: The RVIB Employment Survey. The Steering Committee for the RVIB Employment Survey. Aust N Z J Ophthalmol. 1999;27(3-4):204-7.
9. Varma R, Richman EA, Ferris FL 3rd, Bressler NM. Use of patient-reported outcomes in medical product development: a report from the 2009 NEI/FDA Clinical Trial Endpoints Symposium. Invest Ophthalmol Vis Sci. 2010;51(12):6095-103.
10. Fayers PM, Sprangers MA. Understanding self-rated health. Lancet. 2002;359(9302):187-8.
11. Carvalho KM. Baixa visão em idosos: causas, estado funcional, percepções de limitações e reabilitação visual em unidade hospitalar universitária. Campinas. [tese Livre-Docência em Ciências Médicas]. Campinas: Universidade Estadual de Campinas; 2007.
12. Mangione CM, Lee PP, Gutierrez PR, Spritzer K, Berry S, Hays RD; National Eye Institute Visual Function Questionnaire Field Test Investigators. Development of the 25-item National Eye Institute Visual Function Questionnaire. Arch Ophthalmol. 2001;119(7):1050-8.

13. Simão LM, Lana-Peixoto MA, Araújo CR, Moreira MA, Teixeira AL. The Brazilian version of the 25-Item National Eye Institute Visual Function Questionnaire: translation, reliability and validity. Arq Bras Oftalmol. 2008;71(4):540-6.
14. Bravo Filho VT, Ventura RU, Brandt CT, Sarteschi C, Ventura MC. [Visual impairment impact on the quality of life of the elderly population that uses the public health care system from the western countryside of Pernambuco State, Brazil]. Arq Bras Oftalmol. 2012;75(3):161-5. Portuguese.
15. Chia EM, Wang JJ, Rochtchina E, Smith W, Cumming RR, Mitchell P. Impact of bilateral visual impairment on health-related quality of life: the Blue Mountains Eye Study. Invest Ophthalmol Vis Sci. 2004;45(1):71-6.
16. Wang BZ, Pesudovs K, Keane MC, Daly A, Chen CS. Evaluating the effectiveness of multidisciplinary low-vision rehabilitation. Optom Vis Sci. 2012;89(9):1399-408.
17. Carvalho KM, Monteiro GB, Isaac CR, Shiroma LO, Amaral MS. Causes of low vision and use of optical aids in the elderly. Rev Hosp Clin Fac Med São Paulo. 2004;59(4):157-60.
18. Stelmack J. Quality of life of low-vision patients and outcomes of low-vision rehabilitation. Optom Vis Sci. 2001;78(5):335-42. Review.
19. Hinds A, Sinclair A, Park J, Suttie A, Paterson H, Macdonald M. Impact of an interdisciplinary low vision service on the quality of life of low vision patients. Br J Ophthalmol. 2003;87(11):1391-6.
20. Monteiro MM, Montilha RC, Gasparetto ME. [Speech and language pathology therapy and the reading and writing of a person with visual disabilitie: exploratory study]. Rev Bras Ed Espec. 2011;17(1):121-36. Portuguese.
21. Trauzettel-Klosinski S, Hahn GA. Support for patients loosing sight. Dev Ophthalmol. 2003;37:199-214. Review.
22. Ferraz EV, Lima CA, Cella W, Arieta CE. [Adjustment of a quality of life evaluation questionnaire to aplication in cataract patients]. Arq Bras Oftalmol. 2002;65(3):293-8. Portuguese.
23. Mello PR, Roma AC, Moraes Junior HV. [Analysis of the life quality of infectious and non-infectious patients with uveitis using the NEI-VFQ-25 questionnaire]. Arq Bras Oftalmol. 2008;71(6):847-54. Portuguese.

Corresponding author:
Mayla M. B. Monteiro
Rua Renato Portioli, 509 Jardim Itapema, Mogi Mirim, SP
Zip code: 13801-036; Brazil
Fax: 19 3862-1839
E-mail: maylamonteiro@gmail.com