DOI 10.5935/0034-7280.20180055

Epidemiological profile of the patient undergoing cataract surgery

Perfil epidemiológico do paciente submetido ao mutirão de catarata

Ana Carolina Dalarmelina Almança[1], Stella Pereira Jardim[1], Suélen Ribeiro Miranda Pontes Duarte[1]

ABSTRACT

Objective: *To evaluate the efficacy of cataract surgery performed in the city in 2017, aiming to increase the production of cataract surgeries and reduce the prevalence of cataract in the population.* ***Methods:*** *This is an observational, descriptive, cross-sectional and retrospective study based on the data analysis of the cataract mutirão developed in Itajubá, in the year 2017, through information from records obtained from the Outpatient Information System (SIA / SUS) and the Hospital Information System (SIH / SUS), concomitant with the Health Department. Statistical analyzes were performed according to sample characteristics and considered p-value.* ***Results:*** *In the study, there was a significant regional demand for cataract surgeries, especially the Hilton Rocha Foundation in Belo Horizonte, with 2030 in total. At Santa Casa, 538 patients were seen, all of whom underwent keratometry, 269 did the biometry and the retinal mapping in both eyes and finally 195 people underwent cataract surgery of the right eye and 193 of the left eye, totaling 388 surgeries. Being that 54% of the demand was scheduled. At the Specialized Medical Assistance Clinic, 446 patients were attended, all of whom performed the keratometry exam, 352 did the right eye biometrics and 387 left eye examinations, 321 performed the right eye retinal mapping and 376 of the left eye and finally 200 people underwent cataract surgery of the right eye and 200 of the left eye, totaling 400 surgeries.* ***Conclusion****: The data are in agreement with the sample of the present study, since it was possible to perceive the great demand for cataract surgeries in the different regions and the great impact that the collective mobilization for cataract surgery carried out in the city, improving the quality of life of the people. Thus, the effort made was extremely important, since with surgery, it is avoided that the cataract situation evolves into a total loss of vision.*

Keywords: *Cataract; Cataract extraction; Ophthalmologic surgical procedures; Phacoemulsification; Retina*

RESUMO

Objetivo: Avaliar a eficácia do mutirão de cirurgia de catarata realizado em um município, em 2017, visando o incremento na produção de cirurgias de catarata e a redução da prevalência de catarata na população. **Métodos:** Trata-se de um estudo observacional, descritivo, transversal e retrospectivo a partir da análise de dados do mutirão de catarata desenvolvida, no ano de 2017, por intermédio de informações de registros obtidas junto ao Sistema de Informação Ambulatorial (SIA/SUS) e o Sistema de Informação Hospitalar (SIH/SUS), concomitante com a Secretaria de Saúde de Itajubá. Foram realizadas análises estatísticas de acordo com características da amostra e considerado p-valor. **Resultados:** No estudo, observou-se que a significativa demanda regional por cirurgias de catarata, com destaque para a Fundação Hilton Rocha em Belo Horizonte, com 2030 no total. Na Santa Casa, foram atendidos 538 pacientes, em que todos estes realizaram o exame de ceratometria, 269 fizeram a biometria e o mapeamento de retina em ambos os olhos e por fim 195 pessoas fizeram a cirurgia de catarata do olho direito e 193 do olho esquerdo, totalizando 388 cirurgias. Sendo que 54% da demanda foi agendada. Em uma Clínica Especializada Assistência Médica, foram atendidos 446 pacientes, em que todos estes realizaram o exame de ceratometria, 352 fizeram a biometria do olho direito e 387 do olho esquerdo, 321 realizaram o mapeamento de retina do olho direito e 376 do olho esquerdo e por fim 200 pessoas fizeram a cirurgia de catarata do olho direito e 200 do olho esquerdo, totalizando 400 cirurgias. **Conclusão:** Os dados vão de encontro com a amostragem do presente estudo, já que foi possível perceber a grande demanda por cirurgias de catarata nas diferentes regiões e o grande impacto que o mutirão realizou na cidade, melhorando a qualidade de vida das pessoas. Dessa forma, o mutirão realizado foi de extrema importância, uma vez que com a cirurgia, evita-se que o quadro de catarata evolua para uma perda total da visão.

Descritores: Catarata; Extração de catarata; Procedimentos cirúrgicos oftalmológicos; Facoemulsificação; Retina

[1] Faculdade de Medicina de Itajubá, Itajubá, MG, Brazil.

The authors declare no conflicts of interests.

Received for publication 18/06/2018 - Accepted for publication 12/08/2018.

Introduction

According to WHO[1], about 40-45 million people are blind in the world, and another 135 million suffer from severe vision limitations. Cataract accounts for 50% of blindness worldwide.[2] It is estimated to occur to some degree in 50% of people aged 50 years or older, and in almost all individuals who are 80 years or older.[3,4] According to IBGE, there are 6.5 million people with visual impairment in Brazil.[5]

Cataract is a condition causing congenital or acquired opacity in the crystalline capsule or substance, which may cause partial or total loss of sight, as well as blurred vision, decreased night vision, and photophobia.[5] The crystalline maintains its transparency due to the dehydration relative to the surrounding environment, and any change in its capsule changes this electrolyte state and thus interferes with the normal development of this lens or its transparency.

There are three classifications for cataract, being them congenital cataract present at birth; secondary cataract appearing secondarily due to varied ocular and systemic factors; and senile cataract due to age-related biochemical alterations. Approximately 85% of cataracts are senile, with a higher incidence in the population over 50 years.[2] In these cases, it is not considered a disease, but a normal process of aging.

Clinical treatment such as glasses prescription has a transient effect, and the pharmacological treatment has not yet proven effective. Surgery, therefore, is the only option to recover the visual capacity of the senile cataract patient. Cataract surgery associated to the implant of intraocular lens is a sophisticated technological procedure that is quite safe and effective, providing visual rehabilitation in the great majority of cases.[6,7]

Thus, to date there is no proven clinical treatment for cataract, and the only effective treatment is surgical extraction, which can be through the main techniques: intracapsular (requiring the use of corrective lenses), manual extracapsular of the crystalline (EECP), and phacoemulsification (Faco).[8] Cataract surgery with intraocular lens (IOL) implant is one of the most performed ophthalmologic surgical procedures in the world. In most developed countries, Faco is the most commonly used technique due to the possibility of rapid visual recovery and the low rate of intraoperative complications.[9]

A cataract surgery depends on several factors so that the result satisfies the surgeon and especially the patient. Among them, there is the retina mapping and the biometry exam in the preoperative period.

Retinal mapping aims at evaluating whether the patient has any fundoscopy alteration preventing the surgical success. If something is detected, the patient needs to be aware that the vision may not improve completely.[10]

There are two methods for the biometric exam: ultrasound biometry (ecobiometry) and optical biometry. In echobiometry, the axial length measurement (anteroposterior diameter of the eye) is determined by the time at which echoes emitted by the probe need to go beyond the interfaces of the cornea to the retina and return to the probe, and the rate of ultrasound propagation varies according to density of the study medium. It allows the determination of the degree of intraocular lens to be used in the cataract surgery - since it allows measuring the length of the eye, essential data for the choice of this lens.[11]

Optical ocular biometry consists of using a 780 nanometer infrared laser beam emitted to a beam splitter consisting of two mirrors, a mobile one and a fixed one. This splitter generates two coaxial beams directed into the eye, and them will be reflected on the anterior surface of the cornea and the retinal pigment epithelium, eliminating the influence of longitudinal eye movements. The optical biometer uses the partial coherence interferometry method to obtain the necessary measures for the axial length calculation. In addition to the axial length and depth of the anterior chamber, the optical biometer also evaluates the curvature of the eye, which is given by the principle of light reflection.[12]

The optical biometry uses light in the form of a laser and is performed with the patient sitting, not requiring the use of anesthetic eyedrops and without contact with the eye. At the same time, measurements of the corneal curvature and depth of the anterior chamber are made. At the end of the exam, the device lists the values measured and calculates the degree possibilities for each type of intraocular lens available using the biometric formulas. The axial length is determined based on the optical interferometry method using two coaxial light beams to focus on the anterior surface of the cornea and the pigmented epithelium of the retina and eliminate the influence of the longitudinal movements of the eye. As the patient keeps a fixed stare, the measurement is performed up to the macular area.[13]

For the patient to have a satisfactory beneficial result, the postoperative period is very important. The medical prescription should be followed, which should include: rest, use of the eyedrops according to the prescription, not squeezing or rubbig the eyes in the first hours after surgery, and it is necessary to use a protector over the eyes when sleeping.[5]

In order to allow effective assistance to the population, cataract surgeries revealed that a relevant percentage of the population did not have severe surgery complications, and the risk of severe complication decreased with the development of surgical tools and techniques.[14]

And the mutual-aid community effort institutionalized by the Ministry of Health for the organization of national campaigns for elective surgery and created with the purpose of reducing waiting lists and time for elective surgeries as in the case of cataract made it possible to provide an improvement in the quality of life of the population in the age group over 50 years. It contributes effectively to the reduction of blindness rates among the low income population.[7]

Estimates indicate that for Brazil to compensate for the raising of new cases of cataract it would be necessary to have about 500 thousand surgeries per year.[9] Being the interest of the present study to evaluate the regional cataract effort, the data was reliable in order to identify and evaluate the effective strategy of the effort adopted with the objective of reducing the waiting list for cataract surgery performed in the period of 2017.

It is possible that there is still a repressed demand in the southern region of Minas Gerais that has not been studied due to the lack of reliable parameters for analysis. The strategy of the cataract effort seems to be adequate to reduce in a short time the waiting lists for surgery, thus fulfilling the objectives of its implementation. Population size and structural differences

to make this community effort are factors of interference in reducing the repressed demand or the excess of production at the local level. [15]

It should also be noted that most individuals report improvement in productivity after cataract surgery, and this fact may indicate the return of the State investment with the surgical procedure, as well as an improvement in the patients' quality of life. One of the basic principles of the public health economy is to adopt rationalized measures that can reduce costs without increasing health risks.[16]

Methods

This is an observational, descriptive, cross-sectional and retrospective study based on the data analysis of the cataract community effort made in Itajubá in 2017 with information from data obtained at Sistema de Informação Ambulatorial (SIA/SUS) and Sistema de Informação Hospitalar (SIH/SUS), concomitant with Secretaria de Saúde de Itajubá.

All cataract surgeries carried out in 2017 with funding from Sistema Único de Saúde (Single Health System - SUS) were analyzed in this period, as well as the classification of surgeries described in SIA/SUS (CID 405050119 - Phacoemulsification with rigid intraocular lens implant, and CID 405050372 - Phacoemulsification with a folding intraocular lens implant). 17

The variables analyzed were number of surgeries carried out during the cataract effort, number of schedules, number of procedures performed preoperatively.

The inclusion criteria were the presence of a diagnosis of senile cataract in at least one eye, prescription of cataract surgery in the first eye, surgeries carried out at SUS, authorization of High Complexity Procedures / cost - APAC (implanted for all surgeries of cataract - routine and campaign), surgeries carried out at SUS.

The exclusion criteria were previous ocular surgeries, other associated eye diseases, visual acuity (VA) less than 20/400 in at least one eye and for reasons other than cataract.

The BioEstat 5.0 program and the paired T-test were used, with a confidence level of 95%. The data analyzed was from the cataract community effort which took place at Hospital Santa Casa e Saúde and Clínica Especializada Assistência Médica de Itajubá.

The study was approved by the Research Ethics Committee (CEP) of the Faculdade de Medicina de Itajubá (FMIt), with an opinion No. 2,393,360 according to Resolution 466/2012 of the National Health Council (CNS), which defines the standards for research involving human beings

.

Results

Figure 1 shows a great regional demand for cataract surgical procedures, with emphasis to Fundação Hilton Rocha in Belo Horizonte, accounting for 2,030 cataract surgeries by Facoemulsification with implant of folding intraocular lens (CID: 405050372) in total.

In the analysis of the scheduling values of the cataract surgeries carried out at Santa Casa de Itajubá, according to figure 2, 54% of the demand was scheduled, 4% were scheduled and canceled, 25% did not want to schedule or had previously scheduled, 13% did not return or their records were outdated, and 4% did not want to participate.

Figures 3 and 4 show that it is possible to establish a comparison between the number of patients treated, number of ophthalmologic procedures carried out, and people undergoing cataract surgery. Since 538 patients were treated at Santa Casa de Itajubá and all of them underwent the keratometry exam, 269 had ocular biometry (BIO LE and BIO RE) and retinal mapping in both eyes (MR LE and MR RE). Finally, 195 people underwent cataract surgery of the right eye (CIR RE), and 193 of the left eye (CIR LE), totaling 388 surgeries.

At the specialized medical clinic in Itajubá, 446 patients were treated and underwent the keratometry exam, 352 had biometry of the right eye (BIO RE) and 387 of the left eye (BIO LE), 321 had retinal mapping of the right eye (MR RE) and 376 of the left eye (MR LE). And 200 people underwent cataract surgery of the right eye (CIR RE), and 200 of the left eye (CIR LE), totaling 400 surgeries.

For the data verified and analyzed with the paired t-test, the value of $p<0.05$ was considered significant, with statistically significant results ($p<0.05$) among the variables analyzed above.

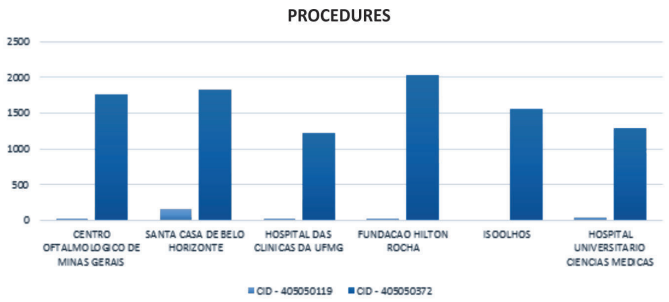

Figure 1: . Number of regional procedures.

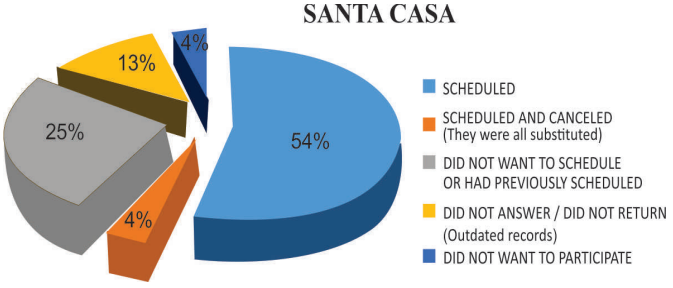

Figure 2: Schedules at Santa Casa.

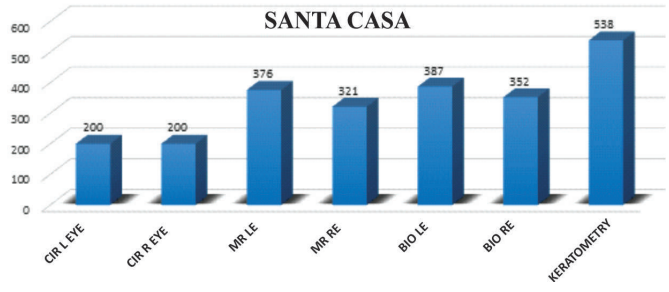

Figure 3: . Number of procedures carried out at Santa Casa in 2017.

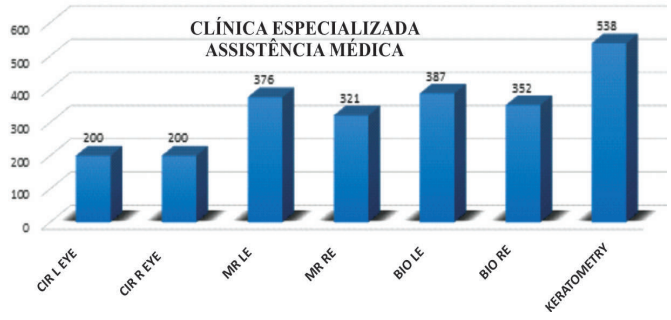

Figure 4: Number of procedures carried out at Clínica Especializada Assistência Médica de Itajubá in 2017.

Discussion

In a study carried out in Jundiaí, 48.7% (n=20) of the 41 patients with prescription for cataract surgery were operated, 7.31% (n=3) refused to do so, and 43.9% (n=18) were referred to clinical treatment of the systemic pathology before surgery.[18] It corroborates the study regarding the surgeries carried out at low cost and with great benefit to patients, confirming that cataract blindness can be cured with safe and effective surgery.

Regarding the surgical technique, there is an increase in the number of surgeons who use phacoemulsification - from 2.6% in 1996[3] to 39% in 2002 - this number is still small when compared to others countries where about 80% of surgeries are done with this technique.[19,20]

According to the WHO, 80% of visual impairments can be avoided or cured if diagnosed and treated in time. It means that almost 700 thousand Brazilians who are blind could be seeing if they had received the proper treatment in time. Therefore, access to ophthalmological medical care is decisive for altering the eye health conditions of the Brazilian people.[21]

By 2020 there will be 75 million blind people and more than 225 million people with low vision in the world, 90% of whom are inhabitants of underdeveloped or developing countries (Brazil).[21]

Although there was a tremendous development in the treatment of cataracts in recent years, cataracts still represent the greatest cause of blindness in the world, responsible for 47.8% of the cases.[22]

Cataracts are a reversible cause of blindness, because at any stage the patient may benefit from surgery leading to almost immediate sight recovery. In most cases, its onset is related to the normal process of aging of the human being, being present in more than 75% of people over 60 years. [23]

Based on these data, Conselho Brasileiro de Oftalmologia (Brazilian Council of Ophthalmology - CBO) developed a series of actions to promote ocular health and prevent blindness at national level. Thus, the CBO has partnered with the Ministry of Health / Single Health System (SUS), Ministry of Education, state and municipal secretariats, and non-governmental organizations. [24]

With these partnerships, programs such as the cataract campaigns (Cataract Community Effort) were possible, and isolated screening actions allowed cataract patients to be identified, so that the surgical procedures were then performed in the indicated cases. This project represented a major advance in the ocular health conditions of the most needy population, and a significant improvement in the quality of life of thousands of elderly people. [24]

The measures of the WHO 2020 Vision Program, a joint initiative of the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) convened in a national blindness prevention commission or Vision 2020, aim at facilitating the implementation of effective and efficient ophthalmic services throughout the country. Vision 2020's mission is to eliminate the main causes of preventable blindness in order to give all the world's people, especially millions of unnecessarily blind people, the right to see. In the long run, the initiative aims to ensure the best possible vision for all people, and thus improve their quality of life. This should be achieved by establishing a sustainable and multi-purpose ophthalmic care system as an integral part of all national health systems.[25]

It also says that since cataract is the cause of half the blindness worldwide and can be treated with surgery, in order to achieve the goals of Vision 2020 an enormous increase in cataract surgery will be required, with approximately 32 million cataract surgeries, compared to the 20 million in 2010.[26]

The successful implementation of visual impairment prevention not only reduces individual suffering, but also brings social and economic gains. The elderly are the group most susceptible to visual impairment and blindness. This fact coupled with the process of demographic transition that the world and Brazil are going through should work as a guide to local, national and global public policies for the prevention of blindness and the promotion of ocular health of the population.[27]

In Brazil, the value of elderly people's health is increasing with the Pact for Life, where elderly health comes as one of the priorities.[28]

Prevention of blindness and visual impairment should be among the priorities of all governments, health professionals, and society. Without the joint and integrated action of all levels, from individual to collective, from public to private, from basic to super-specialized care, there is no way to face this problem that has such an intense and striking repercussion in our society.

Every year, about 1 to 2 million people get blind, and the number of blind people is expected to reach 76 million by 2020.[29] Thus, analyzing the community effort in Itajubá is important, since cataract surgery prevents the evolution of the clinical condition to total loss of sight.

The only curative treatment of cataract is surgery, which consists of replacing the opaque crystalline with a prosthesis called intraocular lens.[30] Surgery is prescribed whenever the cataract patient has altered quality of life, that is, difficulty in performing their usual tasks.[30] The cataract surgery performed is called facectomy, and can be performed by several techniques or methods, with the best known being phacoemulsification and programmed extracapsular extraction31, and in both techniques it is necessary to use the surgical microscope. Technical evaluations showed that phacoemulsification is the safest technique, with fewer complications and almost immediate visual recovery, besides being able to be indicated early.[31]

A survey conducted by Conselho Federal de Medicina (CFM) points out that at least 904,000 elective cataract surgeries are pending in the Single Health System (SUS) in different states and municipalities of the country. Elective surgeries are not urgent or emergency. The study showed that at least 746 of the total surgical procedures are in the waiting list for more than ten years, and 83% of the applicants entered the list after 2016. The Ministry of Health reported that since May 2017 they adopted the single list system to organize the demand.[32]

On the waiting list, the majority of applications is for cataract surgery, and the states of Minas Gerais, São Paulo, Goiás and Ceará presented the highest number of surgeries pending.[33]

Doctors warn that the delay in performing a certain procedure influences the success of treatment. Representatives of CBO explain that the demand for eye procedures has grown due to the aging of the population, among other factors.[34]

The Ministry of Health released a partial balance sheet of 2017 showing a 39% increase in the number of procedures performed in the public network between January and September, which registered more than 150 thousand surgeries. [34]

The joint efforts resulted in an increase in the number of cataract surgeries in Brazil within the scope of SUS, and consequently a decrease in the estimated potential demand for this procedure.[34]

Considering that about 85% of cataracts in people over 50 years old are classified as senile cataract [35], it was observed that health policies related to cataract surgeries have reached over the years the target population of the disease, contributing to the reduction of cataract-preventable blindness. In other words, the age group that benefited the most from the health policies related to cataract in Brazil was the elderly, and this is the population group that seeks the most health services, and there are reports showing that 55% of these individuals have a regular or poor health condition.[36]

Ocular health strategies have been shown to be an important action in order to increase the number of cataract surgeries performed in public institutions, reducing the repressed demand for surgeries and the cases of curable blindness in the country. It is emphasized that they fulfilled the initially proposed objective, which is to serve the needy population, in addition to improving access to ophthalmological services.[37]

Conclusion

Blindness prevention campaigns may ensure a healthy quality of life, promoting education of those involved and being able to demonstrate to the authorities the magnitude of the problem as well as its solution. Many people can benefit from cataract efforts to restore vision and prevent its loss.

When assessing the existence of a relation between the services that offered cataract surgeries in the period of 2017 and the number of surgical procedures performed during this period, we could see that there were relevant amounts of cataract surgeries performed in the region.

It is suggested that individuals with monocular and binocular vision be guided regarding the advantages and disadvantages of cataract surgeries performed in the city, as well as the public health system needs a readjustment to allow access to cataract surgeries with a minimum loss of quality of life of individuals affected by this disease.

Finally, we hope the results obtained in the present study can contribute as scientific evidence for the decision-making process regarding the planning and execution of public policies in ocular health in the three spheres of government: municipal, state and federal

Ackowledgements

We thank Núcleo de Desenvolvimento de Pesquisa e Pós-Graduação of Faculdade de Medicina de Itajubá (NDPPG) for their support. The authors declare no conflicts of interest.

References

1. Conselho Brasileiro de Oftalmologia. Catarata: Diagnóstico e tratamento. Projeto Diretrizes. São Paulo: Associação Médica Brasileira, Conselho Federal de Medicina; 2003.
2. Instituto de visão Assad Rayes. Quando a cirurgia de catarata também corrige o grau. [homepage na internet]. Acesso em:14/03/18. Disponível em: http://institutoassadrayes.com.br
3. Clínica Schaefer. [homepage na internet]. O exame de biometria no sucesso da cirurgia de catarata. Acesso em: 22/03/2018. Disponível em: http://www.schaefer.com.br.
4. Hospital de olhos de Cuiabá. Cirurgia de catarata. Acesso em: 22/03/2018. Disponível em: http://hospitaldeolhosdecuiaba.com.br
5. Sociedade Brasileira de Oftalmologia [homepage na internet]. Catarata. Acesso em: 14/03/18. Disponível em http://www.sbop.com.br
6. Snellingen T, Evans JR, Ravilla T, Foster A. Surgical interventions for age-related cataract. Cochrane Database Syst Rev 2002;2: CD001323.
7. Matthew L, Lanternier MD. Ophthalmology. Department of family medicine, University of Iowa College of Medicine, 4. Ed., cap. 19, 2002.
8. CANAL, I. H et al. Cirurgia de catarata, técnica extracapsular, incluindo biotécnicas. Revista eletrônica de Veterinária Redevet, Vol. 6, n. 2, Fevereiro, 2005.
9. Lundstrom M, Stenevi U, Thorburn W. The Swedish National Cataract Register: a 9-year review. Acta Ophthalmol Scand 2002;80(3):248-57. DOI:10.1034/j.1600-0420.2002.800304.x
10. RIPANDELLI, G., et al. Fellow eye findings of highly myopic subjects operated for retinal detachment associated with a macular hole. Ophthalmology. 2008; 115(9): 1489-93.
11. Alpins N.A., Walsh G. accurate biometry and intraocular lens power calculations. In: Agarwal A., editor. Refractive Surgery Nightmares – Conquering Refractive Surgery Catastrophes. Slack Inc; NJ: 2008. p. 581. p. 581–585.8.
12. Aptomed Saúde Integrativa. Biometria – Calcula o grau da lente intra-ocular. [homepage na internet]. Acesso em 03/06/2018. Disponível em: http://www.aptomed.com.br
13. Instituto Panamericano da Visão. Biometria. [homepage na internet]. Acesso em: 03/06/2018. Disponível em: http://www.ipvisao.com.br
14. Instituto de olhos e otorrino de Bauru. O que é a catarata. [homepage na internet]. Acesso em: 04/06/2018. Disponível em: http://www.iobbauru.com.br
15. SILVEIRA, C.C. Mutirão de catarata: uma estratégia nacional de atenção à saúde, Ministério da Saúde Fundação Oswaldo, 2004.
16. Brown MM, Brown GC. How to interpret a healthcare economic analysis. Curr Opin Ophthalmol. 2005;16(3):191-4. DOI:10.1097/01.icu.0000164166.55550.68
17. Tabela SIA-SUS SIH-SUS das consultas – procedimentos – atendimentos – acompanhamentos no atendimento do PA – pronto atendimento 24 horas equipe médica. [homepage na internet]. Acesso em: 09/06/2018. Disponível em: http://portal.pmf.sc.gov.br
18. Órgão de publicação científica da Faculdade de Medicina de Jundiaí, Estado de São Paulo, Brasil. Aplicação da versão abreviada para professores da Escala de Conners em escolares da região de Jundiaí e cidades vizinhas - Gemignani, S. e cols. Revista Perspectivas médicas; 1998; 9: 13-15.
19. Leaming DV. Practice styles and preferences of ASCRS members - 1999 survey. J Cataract Refract Surg 2000;26:913-21.
20. Krootila K. Practice and preferences of Finnish cataract surgeons - 1998 survey. Acta Ophthalmol Scand 1999;77:544-7.
21. Associação paranaense de oftalmologia. Cegueira- A sua saúde pode estar em risco. Site de notícias G1[homepage na internet];1 de abril de 2016. Acesso em:09/06/18. Disponível em: http://g1.globo.com

22. RESNIKOFF, S. et al. Global data on visual impairment in the year 2002. Bull. World Health Org., Genebra, v. 82, n. 11, p. 844-51, 2004.
23. JOHNS HOPKINS MEDICINE. Eye and vision disorders. Cataracts. 2007.Disponível em: . Acesso em: 25 de março de 2007.
24. CBO. Catarata: Diagnóstico e tratamento. Projeto Diretrizes. Associação Médica Brasileira e Conselho Federal de Medicina, 2007.
25. The internation Agency for the Prevention of Blindness. Vision 2020: The right to sight.[homepage na internet]. Acesso em: 09/06/2018. Disponível em: https://www.iapb.org
26. PEBMED. Cegueira e baixa visão no mundo: cenário atual. [homepage na internet]. Acesso em: 06/06/2018. Disponível em: https://pebmed.com.br
27. GUEDES, R.A.P. As estratégias de prevenção em saúde ocular no âmbito da saúde coletiva e da Atenção Primária à Saúde - APS. [homepage na internet]. Acesso em: 09/06/2018. Disponível em: http://www.ufjf.br
28. Ministério da Saúde. O Pacto Pela Vida e a saúde do idoso. Atenção à saúde da pessoa idosa e envelhecimento. Pactos pela Saúde;2006; 1: 8.
29. KARA-JOSÉ, N; BICAS, HEA; CARVALHO, RS. Cirurgia de catarata: necessidade social.2.ed., São Paulo, 2008.
30. Revista de Medicina e Saúde de Brasília. Catarata senil: uma revisão de literatura. [homepage na internet]. Acesso em: 09/06/2018. Disponível em: https://portalrevistas.ucb.br
31. Snellingen T, Evans JR, Ravilla T, Foster A. Surgical interventions for age-related cataract. Cochrane Database Syst Rev 2002;2: CD001323.
32. CBO. Conselho Brasileiro de Oftalmologia. Diretrizes CFM/AMB Oftalmologia. Acesso em:09/06/2018. Disponível em: http://www.cbo.com.br
33. SINMED. Sindicato dos Médicos de Minas Gerais. Minas Gerais Lidera Ranking nacional de fila de espera para cirurgias eletivas; mais de 434 mil pessoas aguardam uma vaga.[homepage na internet]. Acesso em: 09/06/2018. Disponível em: http://www.sinmedmg.org.br
34. Agência Brasil. SUS tem 904 mil cirurgias eletivas na lista de espera, aponta CFM. [homepage na internet]. Acesso em: 09/06/2018. Disponível em: http://agenciabrasil.ebc.com.br
35. Unimed Ceará. Um alerta para doenças que causam cegueira. [homepage na internet] 3 de abril de 2018. Acesso em: 09/06/2018. Disponível em: http://www.unimedceara.com.br
36. CHAIMOWICZ.F. Saúde do Idoso.[homepage na internet]. Acesso em: 09/06/2018 Disponível em: https://sbgg.org.br
37. SILVA, L. M. P. et al. Perfil Sócio-econômico e Satisfação dos Pacientes Atendidos no Mutirão de Catarata do Instituto da Visão - UNIFESP. Arq. Brasileiro de Oftalmologia, São Paulo, v. 67 n. 5, p. 737-744. 2004.

Corresponding author:
Ana Carolina Dalarmelina Almança
E-mail: anaalmanca@gmail.com