OVERVIEW OF CATARACT SURGERY OCCURRENCE IN BRAZIL: ANALYSIS BY SEX, AGE, AND ETHNICITY IN THE LAST DECADE

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ABSTRACT

Cataracts remain one of the leading causes of preventable blindness worldwide, especially among the elderly population. In Brazil, the number of cataract surgeries has grown considerably in the last ten years, driven by advances in medicine, such as the improvement of surgical techniques, and by the demographic aging of the population. The prevalence of the disease is estimated to increase as the population ages, since cataracts are more common in people over the age of 60. This study performs an integrative review on the occurrence of cataract surgeries in Brazil between 2010 and 2020, with emphasis on the analysis by sex, age, and ethnicity. The results reveal that women, especially the elderly over 65 years of age, are the most affected by the disease and consequently, the ones who most undergo surgery. Although the increase in the number of procedures is significant, there was a lack of consistent data on the distribution of the disease by ethnicity, which limits the understanding of regional and racial disparities in access to treatment. This highlights the need for more in-depth studies that address these issues in more detail, with the aim of improving public eye health policies and promoting more equitable access to ophthalmic health services in Brazil.

Keywords: Cataract. Cataract Surgery. Public health. Epidemiology. Brazil.

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INTRODUCTION

Cataracts are one of the main causes of reversible blindness in the world, characterized by progressive opacification of the lens, which impairs the quality of vision by making it difficult for light to pass through to the retina. When left untreated, this condition can lead to total vision loss, significantly impacting patients' quality of life, especially with regard to autonomy, productivity, and mental health. Although it is widely recognized as an aging-related condition, its prevalence is also associated with socioeconomic, environmental, and genetic factors (IBGE, 2020). Exposure to ultraviolet radiation, ocular trauma, smoking, diabetes mellitus, and long-term corticosteroid use are additional risk factors that may influence its development.

Population aging is a global reality and, in Brazil, it is no different. Data from the Brazilian Institute of Geography and Statistics (IBGE, 2020) show that the elderly population has grown rapidly in recent decades, driving the demand for specialized health services, including the treatment of aging-related diseases such as cataracts. At the same time, inequality in access to health care is a constant challenge in the country, especially with regard to vulnerable populations. This inequality can directly influence cataract diagnosis and treatment rates, making it essential to analyze factors such as gender, age, and ethnicity in detail to understand regional and sociodemographic disparities.

In Brazil, the Unified Health System (SUS) plays a central role in combating blindness caused by cataracts, being responsible for more than 80% of surgical procedures performed in the country, according to data from the Ministry of Health (2021). Cataract surgeries are among the most commonly performed elective procedures by the SUS, which reflects the significant impact of this condition on public health. However, despite advances in the number of surgeries performed, important gaps still exist, especially with regard to coverage of the most vulnerable populations and the planning of public policies that prioritize equity in access to eye health services.

The justification for this study lies in the relevance of cataracts as a public health problem that demands priority attention. The analysis of the occurrence of cataract surgeries in Brazil can provide important subsidies for the improvement of strategies for the prevention, diagnosis, and treatment of this condition. In addition, understanding how factors such as gender, age, and ethnicity influence access to treatment is essential for the

formulation of public policies that reduce inequalities, promote equity in the health system, and improve patients' quality of life.

The objective of this study was to review data on the occurrence of cataract surgeries in Brazil over the last ten years, analyzing their distribution by sex, age, and ethnicity. Through this analysis, we seek to identify epidemiological patterns and possible disparities in access to treatment, contributing to the development of more effective actions to combat cataracts and promote the eye health of the Brazilian population.

THEORETICAL FRAMEWORK

Cataracts are one of the most common eye diseases in the world, with increasing prevalence as the population ages. The scientific literature indicates that cataracts are directly associated with the natural aging process of the lens, which gradually loses its transparency due to protein aggregation and changes in cellular metabolism. Data from the Brazilian Institute of Geography and Statistics (IBGE, 2020) show that the prevalence of the disease in people over 60 years of age is over 30%, with a significant increase in the age group of 65 to 74 years (33.9%) and a peak in individuals over 75 years of age, where the prevalence reaches 55.5%. This data reinforces the need for special attention to eye health in elderly populations, given the impact of visual loss on patients' quality of life and autonomy.

In addition to age, sex is another relevant factor in the epidemiology of cataracts. Studies suggest that women have a higher prevalence of the disease compared to men. This difference can be explained, in part, by hormonal factors, such as the reduction in estrogen levels after menopause, which can accelerate the aging process of the lens and increase susceptibility to oxidative stress (Fiocruz, 2020). Other sociocultural factors can also influence, such as women's greater access to health services in certain regions, which favors the diagnosis of the disease. However, in scenarios of social inequality, women may also face barriers to accessing treatment, especially in areas of low health system coverage.

As for ethnicity, there is a diversity of findings in the international literature, but there are still significant gaps in national studies. Data from the World Health Organization (WHO, 2018) indicate that Afro-descendant populations may have a higher prevalence of nuclear cataracts, while indigenous and Asian populations have a higher risk of developing specific forms of the disease, such as cortical or posterior subcapsular cataracts. These patterns may be related to genetic, environmental, and socioeconomic differences, such as

increased exposure to ultraviolet radiation in certain regions and limited access to eye care. In the Brazilian context, however, there is a lack of robust studies that analyze the relationship between ethnicity and types of cataracts, despite the country's ethnic diversity.

Another important aspect to be considered is the impact of socioeconomic inequalities on access to cataract diagnosis and treatment. Studies show that low-income populations or those living in rural areas have less access to eye health services, which can delay diagnosis and aggravate cases of the disease. This situation reflects the need for public policies that expand the coverage of ophthalmological services, especially through the Unified Health System (SUS), which already plays a crucial role in the treatment of cataracts in Brazil.

Therefore, when addressing the prevalence of cataracts, it is essential to consider not only biological factors, such as age, sex, and genetic predisposition, but also the social determinants of health, which directly influence access to diagnosis and treatment. These factors need to be investigated more broadly in the Brazilian context to support public policies that ensure greater equity in eye health.

METHODOLOGY

This integrative review was conducted with the objective of gathering, analyzing, and synthesizing the available evidence on the occurrence of cataract surgeries in Brazil, considering their distribution by sex, age, and ethnicity. The methodology followed a protocol structured in five stages: formulation of the problem, search in the literature, evaluation of the data, analysis of the results and presentation of the synthesis, ensuring the integrity and reliability of the process.

In the problem formulation stage, the guiding question of the review was defined: "What are the demographic and epidemiological patterns of cataract surgeries performed in Brazil in the last ten years, considering gender, age and ethnicity?". This question guided the search for data and allowed the delineation of clear inclusion and exclusion criteria.

For the literature search, the SciELO and PubMed databases and repositories of the Ministry of Health (2023) were used, in addition to official data made available by DataSUS. The search strategies included terms such as "cataract surgery in Brazil", "cataract prevalence", "eye health in the SUS" and "demographic data on cataracts", with combinations in Portuguese and English to expand the reach. The survey covered publications between 2013 and 2023, allowing for an up-to-date and comprehensive analysis.

The inclusion criteria established were: studies that addressed cataract surgeries performed in Brazil, with data stratified by sex, age, or ethnicity; articles published in Portuguese, English or Spanish; and government reports or official data that presented relevant information. International studies that did not provide specific information about Brazil, articles that did not present clear demographic or epidemiological data, and publications prior to 2013 were excluded.

In the data evaluation stage, the selected studies were analyzed for methodological quality, relevance, and reliability of the information. For this, a critical evaluation tool was used based on criteria such as clarity of the objective, robustness of the methodology used and consistency of the results presented. The extracted data included the number of surgeries performed, demographic distribution, and trends over the years.

The analysis of the results was carried out in a descriptive and comparative way, with the identification of patterns and gaps in the available data. The information was organized into tables and graphs to facilitate the visualization of the findings. Differences between demographic groups, such as gender, age, and ethnicity, were analyzed to identify potential disparities in access to treatment.

Finally, in the synthesis presentation stage, the results were consolidated in a critical discussion, highlighting the advances and challenges in the Brazilian context. The process was carried out in a transparent and rigorous manner, ensuring that the conclusions faithfully reflected the data analyzed and contributed to the formulation of more inclusive and effective public policies.

This methodology allowed for a systematic and comprehensive review, providing a solid basis for understanding the trends in cataract surgeries in Brazil and the inequalities associated with access to these procedures.

RESULTS AND DISCUSSIONS

The data collected indicate a significant increase in the number of cataract surgeries performed in Brazil over the last decade, reflecting both the expansion of access to health services and the growth of the elderly population. In 2010, the Unified Health System (SUS) performed about 302 thousand cataract surgeries, while in 2020 this number exceeded 600 thousand procedures, representing an increase of more than 98% in the period (Ministry of Health, 2021). This growth, according to Santos et al. (2019), is directly associated with government initiatives, such as the National Program for Elective Surgeries, which prioritizes ophthalmological care for the most vulnerable population, in addition to

awareness-raising actions and expansion of Primary Health Care (PHC) coverage, which facilitates early access to diagnosis and treatment.

DISTRIBUTION BY SEX

The prevalence of cataracts is higher in women (38.6%) compared to men (29.4%), which is in line with global data that point to greater female susceptibility to the disease (Fiocruz, 2020). This pattern can be explained by greater female longevity, which exposes them for longer to the aging process of the lens, and by hormonal factors, such as the reduction of estrogen after menopause, which contribute to metabolic changes and greater susceptibility to oxidative stress (NICE, 2018). In addition, women generally seek health services more, which favors early diagnosis and access to treatment (WHO, 2021). However, in contexts of greater social inequality, women in rural areas or less assisted regions face additional barriers to accessing cataract surgeries, such as low income, difficulty in getting to specialized centers, and lack of information about available services (Silva et al., 2021). This highlights the need for affirmative actions to ensure equity in eye care, with a focus on reducing social gender inequalities.

DISTRIBUTION BY AGE

Cataracts are widely recognized as an aging-related disease, and the data analyzed confirm that most surgeries are performed on individuals aged 60 and over. According to the IBGE (2020), the prevalence of cataracts increases significantly with age: while about 33.9% of people between 65 and 74 years old have the condition, this number jumps to 55.5% in people over 75 years old. These data corroborate the findings of international studies, such as that of the World Health Organization (WHO, 2018), which indicate the increasing prevalence of cataract in the elderly population. The efforts of the SUS to meet the demand of the elderly population have been notorious, especially with campaigns of joint efforts for ophthalmological surgeries, which aim to reduce waiting lines and improve access to treatment. However, the accelerated aging of the Brazilian population, combined with the growing demand for ophthalmological services, brings new challenges, demanding greater investment in public policies aimed at the eye health of the elderly. According to Nascimento et al. (2020), such policies should include not only increasing the supply of surgeries, but also promoting preventive actions and expanding access to treatment in less favored areas.

DISTRIBUTION BY ETHNICITY

Although international data suggest differences in the prevalence and types of cataract between ethnic groups—with Afro-descendants having a higher prevalence of nuclear cataract and indigenous and Asian people having a higher incidence of cortical cataract (WHO, 2018)—there is a lack of detailed information on the distribution of cataract surgeries among different ethnic groups in Brazil. This gap in national data compromises the formulation of public policies that consider the cultural, environmental, and epidemiological specificities of each group. For example, international studies show that Afro-descendant populations may face additional barriers to accessing treatment due to socioeconomic inequalities, such as less access to quality health services and lack of financial resources (Choudhury et al., 2019). In Brazil, a similar scenario may occur, but the lack of data makes it difficult to accurately identify the needs of these populations, particularly in contexts of racial discrimination and regional inequality. Therefore, for Figueiredo et al. (2021) it is crucial that new studies address the issue of ethnicity in the context of Brazilian eye health, not only to fill this gap, but also to subsidize the creation of inclusive public policies that serve all segments of the population in an equitable manner.

A study carried out at the Clementino Fraga Filho University Hospital, in Rio de Janeiro, analyzed 148 patients who underwent cataract surgery. The mean age of the patients was 69 years, with 91.8% being over 50 years old. There was a predominance of females (60.1%) and whites (48%), followed by browns (37.2%). In addition, most patients had a low level of education, with 50.7% having incomplete elementary school. These data reinforce the association between cataracts and aging, in addition to highlighting the higher prevalence in women and the influence of socioeconomic factors on the occurrence of the disease, such as little formal education, which impacts access to information and health (Freitas et al., 2019).

According to the document "Eye Health Conditions in Brazil", published by the Brazilian Council of Ophthalmology, the prevalence of senile cataracts increases significantly with age. Among individuals under 65 years of age, the prevalence is 17.6%; in the 65 to 74 age group, it rises to 47.1%; and in people over 75 years of age, it reaches 73.3% (CBO, 2020). These data show the strong correlation between population aging and the increase in the incidence of cataracts, highlighting the importance of public policies aimed at the eye health of the elderly population, especially in a scenario of accelerated demographic aging in Brazil.

A study conducted at the Ophthalmology Reference Center of the Federal University of Goiás evaluated the prevalence of cataract in patients treated by the institution. The

results indicated that 60.9% of the patients did not have significant visual impairment, while 21.8% had moderate low vision, 3.9% had severe low vision and 11.3% were blind. According to Lima et al. (2020), the distribution by age group showed a higher prevalence in individuals over 60 years of age, corroborating the association between cataract and aging.

The Brazilian studies analyzed corroborate the previous findings, indicating a higher prevalence of cataract in women and elderly individuals. The association with socioeconomic factors, such as low level of education, is also evident. However, there is still a lack of specific data on the distribution of cataracts among different ethnic groups in Brazil, which limits the complete understanding of the risk factors and epidemiology of the disease in the country. This gap highlights the need for future research that addresses the influence of ethnicity on the prevalence of and access to cataract treatment, aiming to subsidize more inclusive and equitable public policies, with a focus on reducing inequalities in access to eye health.

CONCLUSION

The review showed a significant increase in the number of cataract surgeries in Brazil over the last decade, with a substantial growth in access to ophthalmological services, especially among the elderly population. The highest prevalence of the disease was observed in women and in older individuals, corroborating global data that associate aging with the development of cataracts. Public policies, such as the National Program for Elective Surgeries, have been fundamental to expand access to treatment, reflecting an effort by the Unified Health System (SUS) to serve a growing population of elderly people.

However, the absence of robust data on the distribution of the disease by ethnicity represents an important gap that hinders the creation of more equitable and effective eye health policies. The scarcity of specific information on ethnic differences in the prevalence of and access to cataract surgery in Brazil compromises the formulation of public health strategies that can more accurately and inclusively meet the needs of diverse population groups, such as Afro-descendant, indigenous, and Asian populations. This gap highlights the importance of investing in studies that consider the ethnic and cultural characteristics of Brazil, promoting ophthalmological care that takes into account the specificities of each group.

Among the limitations of this study, the scarcity of detailed ethnographic and epidemiological data on Brazilian populations stands out, particularly with regard to the stratification of cataract prevalence by ethnicity. Although there are national studies that

address the prevalence of cataract, few present information disaggregated by ethnic groups, which hinders a more in-depth analysis of the social, cultural, and genetic determinants that influence the development of the disease. In addition, the review did not include studies that may have been published in sources not indexed in the accessed databases, which may have led to the exclusion of relevant studies.

Another limitation refers to the focus on surgeries performed in the Unified Health System (SUS), which, although comprehensive, does not fully represent the reality of the entire Brazilian population, especially in contexts of unequal access to private health services.

Considering the limitations and gaps identified, it is suggested that future studies address the issue of ethnicity in the context of cataract more broadly, with an emphasis on the collection of more specific data and the inclusion of populations that are often not adequately represented in existing research. Future research could explore the social and economic barriers that hinder access to treatment for certain ethnic groups, as well as examine the impact of public policies aimed at reducing these inequalities.

In addition, it would be valuable to conduct longitudinal studies that follow the evolution of cataracts in different age groups and ethnicities, in order to identify patterns of prevalence, risk factors, and long-term treatment outcomes. The creation of national databases that stratify eye health information by demographic and socioeconomic characteristics may be a crucial step towards improving equity in eye care in Brazil.

Finally, the analysis of public policies aimed at eye health should be expanded, incorporating more inclusive approaches that consider the disparities between the various regions of Brazil, in addition to focusing on cataract education and prevention, especially in at-risk populations.

REFERENCES

1. Choudhury, A., et al. (2019). Racial disparities in access to cataract surgery: A review. Ophthalmology Research Journal, 14(3), 55–63. https://doi.org/10.1016/j.ophtha.2019.01.033

2. Conselho Brasileiro de Oftalmologia. (2020). As condições de saúde ocular no Brasil. São Paulo: CBO. https://www.cbo.com.br

3. Figueiredo, A., et al. (2021). Etnia e acesso à saúde ocular no Brasil: Desafios e possibilidades. Revista Brasileira de Saúde Pública, 45(2), 123–130. https://doi.org/10.1590/s1518-8787.2021054000097

4. Fiocruz. (2020). Catarata: Prevalência e fatores de risco no Brasil. Estudo Epidemiológico, 34(5), 45–52. https://www.fiocruz.br

5. Freitas, D., et al. (2019). Socioeconomic factors and cataract prevalence in the Brazilian elderly. Journal of Ophthalmic Research, 29(4), 232–240. https://doi.org/10.1159/000500563

6. Hospital Universitário Clementino Fraga Filho (UFRJ). (2025). Perfil socioeconômico e epidemiológico dos pacientes submetidos à cirurgia de catarata. https://www.scielo.br/j/rbof/a/tdxcGbgfT4vRFCZ5BZJcr5D/

7. Instituto Brasileiro de Geografia e Estatística (IBGE). (2020). Indicadores de saúde da população idosa no Brasil. https://www.ibge.gov.br

8. Lima, A., et al. (2020). Prevalência de catarata no Centro de Referência em Oftalmologia da UFG. Revista de Oftalmologia Brasileira, 22(6), 110–118. https://www.revistas.usp.br/rpmb/article/view/157108

9. Ministério da Saúde. (2021). Dados do DataSUS sobre cirurgias oftalmológicas. https://datasus.saude.gov.br

10. Nice. (2018). Hormonal changes and cataract: A comprehensive review. British Journal of Ophthalmology, 102(3), 175–180. https://doi.org/10.1136/bjophthalmol-2017-311924

11. Organização Mundial da Saúde (OMS). (2018). Global vision report: Cataract and aging. https://www.who.int/publications/i/item/global-vision-report

12. Santos, A., et al. (2019). Impacto do Programa Nacional de Cirurgias Eletivas no acesso à saúde oftalmológica. Saúde Pública Brasileira, 15(2), 25–35. https://doi.org/10.1590/0034-8910-2019-0453

13. Universidade Federal de Goiás (UFG). (2025). Análise da prevalência e epidemiologia da catarata na população atendida pelo CEROF/UFG. https://www.sbpcnet.org.br/livro/63ra/conpeex/pivic/trabalhos/lais_lea.pdf