Open Access

Epidemiology & Public Health

Article Type: Research Article

Volume 1 Issue 2 - 2023

Assessment of the Progression of Public Investments in Cataract Surgery in Brazil

Silvana Rossi[1]; Amanda Latuffesoares[2]; Bruno Tavares Baroni[2]; Samuel Elias Marinho Da Costa[2]; Newton Kara-Junio[3]*

[1]PhD Student, Department of Ophthalmology, Faculty of Medicine, University of São Paulo, São Paulo, Brazil.

[2]Medical Student, Faculty of Medicine, University of São Paulo, São Paulo, Brazil.

[3]Professor, Department of Ophthalmology, Faculty of Medicine, University of São Paulo, São Paulo, Brazil.

Abstract

Objective: To evaluate the progression of public investments in cataract surgery in Brazil and its correlation with the growth of the elderly population and the Gross Domestic Product (PIB) between 2010 and 2021.

Methods: This study was a retrospective analysis of data collected in public databases recording surgical procedures and the amounts invested per surgery to treat senile cataracts, performed per year and by region by the Unified Health System in 2010 and 2021.

Result: The number of cataract surgeries performed by Brazil's public health system increased from 356,088 in 2010 to 640,408 in 2021, an increase of 79.77%, while the population over 60 years old increased by 50.08%. The increase in the number of surgeries resulted from the greater public investments in the area (increase of 26.61% in corrected values), which was consistent with the increase in Gross Domestic Product (PIB) during the period (30.88% in corrected values).

Conclusions: In Brazil, the progression of public investments in cataract surgery from 2010 to 2021 was similar to the increase in PIB. Moreover, the increase in the number of surgeries performed by the public health system didnot only offset the increase and aging of the population, but it also reduced a proportion of the accumulated cases of blindness due to cataracts.

***Corresponding author:** Silvana Rossi

Department of Ophthalmology, Faculty of Medicine, University of São Paulo, São Paulo, Brazil.

Email: rossi.odontosil@gmail.com

Received: Sep 20, 2023

Accepted: Oct 19, 2023

Published: Oct 26, 2023

Epidemiology & Public Health - www.jpublichealth.org

Citation: Rossi S, Latuffesoares A, Baroni BT, Costa SEM, Junio NK, et al. Assessment of the progression of public investments in cataract surgery in Brazil. Epidemiol Public Health. 2023; 1(2): 1015.

Keywords: Cataract surgery; Preventing blindness; Phacoemulsification; Extracapsular cataract extraction; Epidemiology; Public health service.

Introduction

Cataract is one of the main causes of blindness in Brazil and globally, and its surgery is highly cost-effective for treatment and visual rehabilitation [1-3].

In Brazil, the public health system is responsible for approximately 75% of cataract surgeries [4,5]. With the increase in life expectancy of the Brazilian population, it is crucial to assess the patterns of government investment for the treatment of blindness due to cataracts, so asto guide public policies using scientific evidence.

This study aims to evaluate the progression of public investments in cataract surgery in Brazil and its correlation with the increase in the elderly population and the Gross Domestic Product (PIB) between 2010 and 2021.

Methods

This was a retrospective study involving the analysis of databases including DATASUS, Ministry of Health, Brazilian Institute of Geography and Statistics (IBGE), and National Health Fund Portal (FNS) https://portalfns.saude.gov.br/about-o-fns/. Unified Health System (SUS) cataract procedures performed be-

tween 2010 and 2021 either in hospitals or outpatient clinics, including extracapsular cataract extraction (ECCE) and phacoemulsification with or without Intraocular Lens (IOL) implantation, were analyzed. Data from 2010 and 2021 were derived from the system considering the following codes: 405050097 and 405050100 for ECCE and 405050119 and 405050372 for phacoemulsification.

The number of procedures and costs were analyzed according to year and region. To obtain the number of procedures performed in the Unified Health System (SUS), we accessed the link http://datasus.saude.gov.br/informacoes-de-saude/tabnet, a public domain tabulator. Data relating to Outpatient Production (SIA/SUS) and/or Hospital Production (SIH/SUS) (by state, municipality, frequency, values, and periods) were collected on December 8, 2022 and reviewed on April 10, 2023 [6-12].

Population data were estimated based on the 2010 census, since the 2022 census had not yet been released, and Gross Domestic Product (PIB) were collected from the website of the Brazilian Institute of Geography and Statistics (IBGE) [6-8].

Monetary values were adjusted for inflation using the Broad National Consumer Price Index–IPCA published by the Brazilian Institute of Geography and Statistics (IBGE). The values referring to 2010 were adjusted considering the IPCA inflation rate in the period from 2010 to 2021, using 2021 as the base year. The 2021 values were not adjusted, as they were considered as the baseline for this comparison. Source of IPCA data: https://www.ibge.gov.br/estatisticas/economicas/precos-e-custos/9256-indice-nacional-de-precos-ao-consumidor-amplo.html?=&t=destaques.

Table 1: Number of cataract surgeries performed by the public health system in Brazil in 2010 and 2021, overall and by region.

Year	Brazil	Region				
		Southeast	Northeast	South	Midwest	North
2010	356.088	123.091	144.141	40.366	21.745	26.745
2021	640.408	267.860	186.549	95.027	27.293	63.679
Progress (%)	79.77%	117.63%	29.40%	135.34%	25.51%	138.02%

Table 2: Growth of the population over 60 years of age in Brazil, overall and by region.

Year	Brazil	Region				
		Southeast	Northeast	South	Midwest	North
2010	20,87 million	9,65 million	5,53 million	3,33 million	1,45 million	1,09 million
2021	31,33 million	14,84 million	7,48 million	5,43 million	2,44 million	1,72 million
Progress (%)	50.08%	53.42%	35.2%	63.1%	68.2%	57.8%

Table 3: Amount invested in cataract surgeries and Gross Domestic Product (PIB) in Brazil in 2010 and 2021, in absolute figures and adjusted for inflation in the period.

Year	Amount invested in cataract surgeries	Amount invested in cataract surgeries (corrected by IPCA-base year 2021)	PIB	PIB (corrected by IPCA-base year 2021)
2010	R$ 210.258.054,03	R$ 387.498.993,37	R$3,7 trillion	R$6,8 trillion
2021	R$ 490.603.477,57	R$ 490.603.477,57	R$ 8,9 trillion	R$ 8,9 trillion
Progression (%)	133.43%	26.61%	140.54%	30.88%

Table 4: Amount invested in cataract surgeries by the public health system in Brazil in 2010 and 2021, overall and by region. Unadjusted values and values adjusted for inflation in the period.

Region	Unadjusted for inflation*			Adjusted for inflation*		
	2010	2021	Percentage of investment variation	2010	2021	Percentage of investment variation
Southeast	R$ 71.068.899,65	R$ 204.248.902,10	187,50%	R$ 130.977.751,13	R$ 204.248.902,10	55,94%
Northeast	R$ 87.286.747,90	R$ 143.763.660,58	64,63%	R$ 160.866.736,36	R$ 143.763.660,58	−10,63%
South	R$ 24.151.444,88	R$ 73.241.888,80	203,00%	R$ 44.510.354,78	R$ 73.241.888,80	64,55%
Midwest	R$ 11.958.746,40	R$ 21.031.744,33	75,89%	R$ 22.039.594,22	R$ 21.031.744,33	−4,57%
North	R$ 15.792.215,20	R$ 48.317.281,76	205,80%	R$ 29.104.556,88	R$ 48.317.281,76	66,01%

*Correction based on the Broad National Consumer Price Index: IPCA-IBGE, based on the year 2021.

Results

Table 1 shows the number of cataract surgeries performed by the Public Health System in Brazil and its regions in 2010 and 2021. The number of surgeries performed increased from 356,088 in 2010 to 640,408 in 2021, an increase of 79.77%. The largest increase occurred in the North region (138.02%), and the smallest in the Central-West region (25.50%).

The growth of the population aged over 60 years in Brazil and by region is shown in Table 2.

Table 3 lists the amounts invested by the government in cataract surgeries and their correlation with the increase in Gross Domestic Product (PIB) in the period studied.

Table 4 lists the amounts invested by the government in cataract surgeries in the different regions of the country.

Discussion

In Brazil, it is estimated that >2 million people are affected by cataracts, the majority of whom are aged over 60 years and depend on public policies to have access to surgery [1,13,14].

In this study, it was noted that the number of cataract surgeries performed by Brazil's public health system increased from 356,088 in 2010 to 640,408 in 2021, an increase of 79.77% (Table 1), while the population over 60 years old, consisting of individuals predominantly affected by cataracts, increased by 50.08% (Table 2). The increase in the number of surgeries resulted from the greater public investments in the area (real increase of 26.61%), similar to the increase in GDP (PIB) in the period, which was 30.88% in values adjusted for inflation (Table 3).

In public health, especially in cataract surgery programs, the number of surgeries performed is directly proportional to the funds available to pay for the procedures [15,16].

Thus, we can infer that the progression of public investments in cataract surgery in Brazil from 2010 to 2021, similar to the rate of PIB growth, led to an increase in the number of surgeries. This not only compensated for the population growth and aging, but also reduced a proportion of the accumulated cases of blindness due to cataracts, who were unable to undergo surgery due to access difficulties [15,17,18].

Regarding the distribution of financial resources across the different regions of the country (Table 4), we observed that in the Northeast and Central-West regions, there was a real decrease in investment in cataract surgeries, probably failing to compensate for the new cases that emerged in the period.

Although the status of blindness due to cataracts in Brazil has improved over time, we found that this improvement is not homogeneous, demonstrating the need to adopt public policies based on regional epidemiological evidence.

References

1. Kara-Júnior N, Dellapi RJr, Espíndola RF. Difficulties in access to treatment for patients undergoing cataract surgery in public and private health systems. Arq Bras Oftalmol. 2011; 74: 323-325.
2. Prokofyeva E, Wegener A, Zrenner E. Cataract prevalence and prevention in Europe: A literature review. Acta Ophthalmol. 2013; 91: 395-405.
3. Pascolini D, Mariotti SP. Global estimates of visual impairment: 2010. BrJ Ophthalmol. 2012; 96: 614-618.
4. Available from: http://www.commonwealthfund.org› websites › default HEALTH SYSTEM OVERVIEW Brazil - Commonwealth Fund.
5. World Health Organization (WHO). Universal Eye Health: A Global Action Plan 2014-2019. Available from:http://www.who.
6. Available from: https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/33067-pib-cresce-4-6-em-2021-e-fecha-the-year-in-r-8-7-trillions.
7. Available from: https://painelms.saude.gov.br/extensions/Portal_FAF/Portal_FAF.html.
8. IBGEportal | IBGE [Internet]. Ibge.gov.br.2019 Available from: https://www.ibge.gov.br.
9. Department of Informatics of the SUS Outpatient production (SIA/SUS). Available from:https://datasus.saude.gov.br/acesso-a-informacao/producao-ambulatorial-sia-sus/ (accessed on 20/ Jun/2022).
10. DATASUS; Ministry of Health [Internet]. [cited2023May5]. Available from: http://www2.datasus.gov.br/DATASUS/APRESENTACAO/TABNET/Tutorial_tabNet_FINALout2014.pptx_html/html/index.html#17.
11. Tabnet; DATASUS [Internet]. [cited2023May5]. Available from: http://datasus.saude.gov.br/informacoes-de-saude/tabnet.
12. DATASUS [Internet]. Available from: http://www2.datasus.gov.br. Available from: http://www2.datasus.gov.br/DATASUS/index.php?area=0203.
13. Wang W, Yan W, Fotis K, Prasad NM, Lansingh VC, Taylor HR, et al. Cataract Surgical Rate and Socioeconomics: A Global Study. Invest Ophthalmol Vis Sci. 2016; 57: 5872-5881.
14. Castro MC, Massuda A, Almeida G, Menezes-Filho NA, Andrade MV, et al. Brazil's unified health system: The first 30 years and prospects for the future. Lancet. 2019; 394: 345-356.
15. Kara-Junior N; Espíndola RF. Evolution and viability of an outpatient surgery center for cataract surgery on a large scale in a university hospital. Arq Bras Oftalmol. 2010; 73: 494-496.
16. Kara-Junior N, Avakian A, Lower LMT, Rocha AM, Cursino M, et al. Phacoemulsification versus manual lens extraction: Cost analysis. Arq Bras Oftalmol. 2004; 67: 481.
17. Kara-JúniorN, Temporini ER, Kara-José N. Cataract surgery: Expectations of patients assisted during a community project in São Paulo, state of São Paulo, Brazil. Rev Hosp Clin. 2001; 56: 163-168.
18. Temporini ER, Kara N, JoseNK, Holzchuh N. Popular beliefs regarding the treatment of senile cataract. Rev Saúde Pública. 2002; 36: 343-349.