

Demand incidence of retinal detachment in Brazil

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Abstract

Aim To evaluate the epidemiological characteristics of retinal detachment in a defined urban population in the Southeast of Brazil.

Methods A retrospective study of patients consulted at the Department of Ophthalmology, State University of Campinas, São Paulo, Brazil, with retinal detachment between June 1, 2003 and July 31, 2004. Data were entered into the Statistical Package for the Social Sciences (version 10.0).

Results There were a total population of 3 389 294 in the 42 cities of Campinas catchment area. A total of 313 patients fitted the inclusion criteria. The overall demand incidence of retinal detachment was 9.2:100 000. The number of males peaked in the 50–79 age group, whereas that of the females peaked in the 60 to 80+ age group. The ages ranged from 4 months to 84 years (mean 49.3). The female-to-male ratio was 1:2.1.

Nontraumatic phakic detachments had the highest demand incidence of 7.1:100 000. The demand incidence of nontraumatic aphakic detachments was very low at 0.09:100 000. Almost one third of all patients seeking treatment presented inoperable cases of retinal detachments.

Conclusions This is the first study of demand incidence of retinal detachment in Latin Americans. The age-specific demand incidence increases with age. Nontraumatic phakic detachments were the most common type of detachment. The incidence of the traumatic types of detachment was higher in males than that in females. Such data are important to plan and implement vitreoretinal services taking into account the population likely to be served. *Eye* (2007) 21, 348–352. doi:10.1038/sj.eye.6702202; published online 6 January 2006

Keywords: retinal detachment; epidemiology; health services needs and demand; health service area

Introduction

The ophthalmic needs of the Brazilian population have not been well studied. Analysis of demand patterns for vitreoretinal services can be used as one of the objective measures when planning ophthalmic services requirements and provision of resources.¹ In recent years, there has been significant demand for ophthalmic services and the resulting appointment delays cause unacceptable burden to society.^{1–3}

Despite the fact that retinal detachment (RD) is an important sight threatening condition, there are no national statistics either quantifying or analysing this disorder. In order to plan services, numbers are derived from estimates of the World Health Organization in developing countries which do not necessarily apply to Brazil.⁴

In the 2000 Census, some questions were asked to obtain information on visual impairment in the population, in accordance with a Federal Law enacted in 1993. According to this Census 159 824 people considered themselves unable to see. This source is a starting point in the evaluation of the nation's ophthalmic health.⁵ However, the main criticisms are that it does not discriminate specific ophthalmic conditions nor determine the workload they represent for medical services.

Population-based studies that could yield results with reasonable precision are very expensive to conduct, so alternative ways to assess the magnitude of the problem have been used.⁵ This paper examines the demand incidence of retinal detachment in a defined urban population in the Southeast of Brazil.

Materials and methods

This is a retrospective study of patients consulted at the Department of Ophthalmology, State University of Campinas, São Paulo, Brazil, with RD between June 1, 2003 and July 31, 2004.

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The Department of Ophthalmology is the only center for vitreoretinal repair for the public health district of Campinas, with 42 surrounding cities (2003 total population = 3 389 294). São Paulo city is not included. The Department of Ophthalmology provides publicly funded treatment for patients with retinal detachments referred by the health services of the catchment area (Figure 1). Population data for the Campinas catchment area were based on the findings of the 2003 Brazilian Census estimates.⁴

For this report data were obtained by searching the computerized databases of the Department of Ophthalmology. The medical record linkage system has been recently enhanced to cover all the patients consulted and facilitates studies of disease occurrence and treatment. The study has obtained the approval from the State University of Campinas Research Ethical Committee.

Data extracted from the medical records and collected on a 4-page form included, hospital record number, age, sex, place of residence, and whether or not this was the first eye appointment at the Department. The research

form was tested and modified to ensure that it was comprehensible. The medical records of all identified patients were reviewed and filled out by one ophthalmologist investigator (PHLS) to ensure the accuracy of coded data.

The inclusion criteria were: patients domiciled in the catchment area cities of the Department of Ophthalmology, State University of Campinas consulted in the study period; patients with primary RD of the rhegmatogenous type, including phakic, aphakic and pseudophakic traumatic and nontraumatic cases; and patients with RD after intraocular surgery. The exclusion criteria were retinoschisis, retinal cysts, serous RD, patients with retinopathy of prematurity (ROP) that has progressed to retinal detachment, other tractional retinal detachments, and patients who redetached post RD surgery.

The demand incidence was calculated by dividing the number of new cases of RD presenting to the eye department and diagnosed by the trained staff as obtained in this study, by the population estimates in the catchment area for 2003.⁴ One new case is a new RD

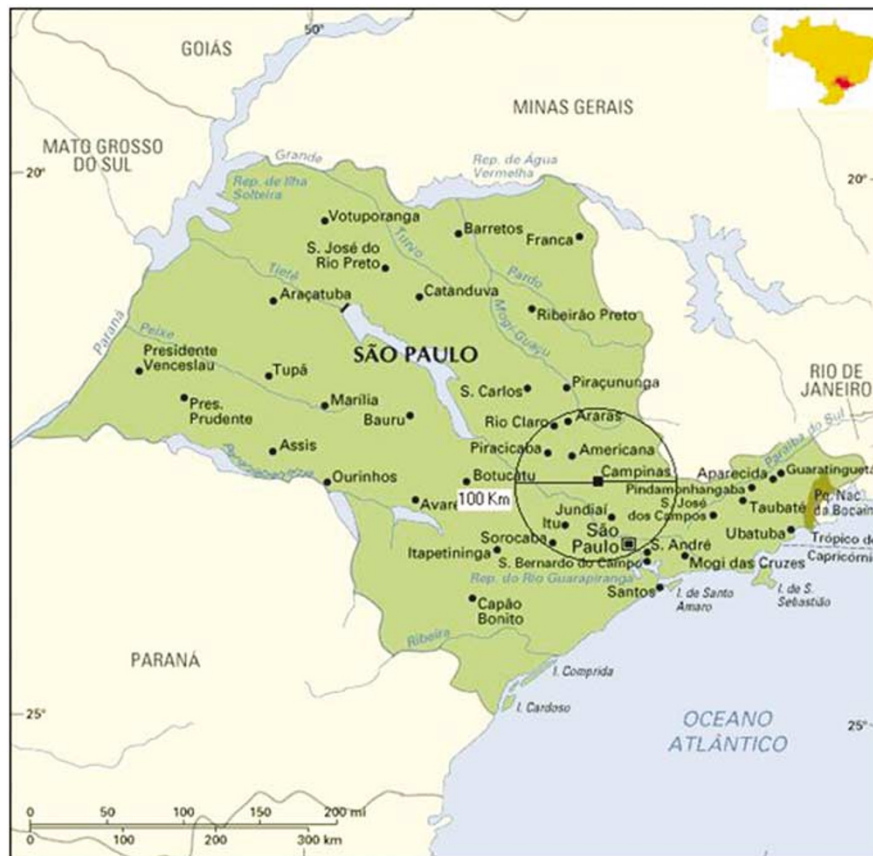


Figure 1 Map of São Paulo State with the encircled catchment area of the Department of Ophthalmology. São Paulo city is not included in the Campinas catchment area. Upper right shows schematic map of Brazil, with São Paulo State highlighted. (Available: www.ibge.gov.br/cidades @-accessed November 1, 2004).

either in one or both eyes at the time of the appointment. The age-specific demand incidence was calculated by dividing the number of cases by the number of people in the population for the specific age group per 100 000 in the Campinas catchment area.

The International Statistical Classification of Diseases, 10th revision⁶ ICD-10 diagnoses code H33.0 was used to identify the retinal detachment-related diagnoses made on the consecutive admissions of catchment area residents to the Department of Ophthalmology.

The data were entered into the Statistical Package for the Social Sciences (version 10.0).

Results

There were 1778 new consultations in the Department of Ophthalmology for vitreoretinal disorders during the study period. Further analysis showed that 397 new patients seen in the Department had RD of all types. In all, 313 patients fitted the inclusion criteria for the study. For the entire study population, the overall demand incidence of RD was 9.2:100 000 in the Campinas catchment area per 100 000 population per year.

The total population and the number of patients with retinal detachment consulted during the study period are shown in Table 1.

Table 2 reveals the demand incidence rates by age range and gender. The number of males peaked in the 50–79 age group, whereas that of the females peaked in the 60–80+ age group.

As indicated in Table 3, there were no traumatic cases of pseudophakic detachments within the Campinas catchment area during the study period. Nontraumatic phakic detachments had the highest demand incidence of 7.1:100 000, whereas the demand incidence of nontraumatic aphakic detachments was very low at 0.09:100 000.

The ages ranged from 4 months to 84 years (mean 49.3). The ages of the females ranged from 4 months to 84 years, whereas the males ranged from 6 months to 83 years (Table 4). The mean age for females was slightly higher than that for males. The female-to-male ratio was 1:2.1.

Of particular concern are the 94 (29.6%) patients whose retinal detachments were regarded as inoperable. In all, 62.8% (59) were males whereas 37.2% (35) were females. These cases included patients presenting either severe visual impairment (light perception or no perception of light) or marked proliferative vitreoretinopathy (grade C types 4 and 5 contraction).⁷

Discussion

We are unaware of any research that has attempted to comprehensively evaluate the demand incidence of the

Table 1 Campinas catchment area population and number of patients with retinal detachment consulted at the Department of Ophthalmology, between June 1, 2003 and July 31, 2004.

Age range	All persons	Male	Female	Number of RD ^a (males)	Number of RD (females)
0–9	561 811	286.379	275.432	3	2
10–19	638 612	322.347	316.265	12	3
20–29	618 815	310.641	308.174	22	8
30–39	553 477	272.951	280.526	34	11
40–49	443 174	217.789	225.385	26	14
50–59	270 976	133.249	137.727	44	13
60–69	172 291	80.696	91.595	45	26
70–79	95 619	41.987	53.632	22	14
80+	34 519	13 260	21.259	5	9
Total	3 389 294	1 679 299	1 709 995	213	100

^aRD = retinal detachment

Table 2 Demand incidence according to age range and gender per 100 000 population per year

Age range	Age-specific demand incidence	Males	Females
0–9	0.9:100 000	1.0:100 000	0.7:100 000
10–19	2.4:100 000	3.7:100 000	0.9:100 000
20–29	6.6:100 000	7.1:100 000	2.6:100 000
30–39	8.7:100 000	12.5:100 000	3.9:100 000
40–49	13.3:100 000	11.9:100 000	6.2:100 000
50–59	34.0:100 000	33:100 000	9.4:100 000
60–69	49.9:100 000	55.8:100 000	28.4:100 000
70–79	38.7:100 000	52.4:100 000	26.1:100 000
80+	40.6:100 000	23.5:100 000	42.3:100 000
Total	9.2:100 000	12.7:100 000	5.8:100 000

Brazilian population relative to patients with sight threatening conditions such as retinal detachment, who must be referred to a hospital eye department.

The total demand incidence of RD in the Campinas catchment area was 9.2:100 000. These data are not dissimilar from results in Sweden (10.6:100 000),⁸ and Singapore (10.5:100 000).⁹ Our calculations underestimate the actual incidences. The profile of private health plans shows that the Southeast Region concentrates 70% of those covered people in Brazil.¹⁰ Campinas constitutes a large urban city and private health plans cover at least 50% of its population.¹¹ Our study relates to patients covered by publically funded health services with retinal detachments referred from services of the Campinas catchment area. In this regard, the real picture may be comparable to previous studies with higher incidences.^{12,13}

Table 3 Demand incidence in the Campinas catchment area for types of retinal detachments

Types of RD	Number of RD	Demand incidence
<i>Nontraumatic</i>		
Aphakia	7	0.2:100 000
Pseudophakia	34	1.0:100 000
Phakia	242	7.1:100 000
Total	283	8.3:100 000
<i>Traumatic</i>		
Aphakia	3	0.09:100 000
Pseudophakia	NIL	NIL
Phakia	27	0.8:100 000
Total	30	0.9:100 000
Total	313	9.2:100 000

Table 4 Age range and gender in the Campinas catchment area

Gender	Age range	Mean (years)
Females	4 months–84 years	50.8
Males	6 months–83 years	48.6

This work and others¹⁴ have indicated that the demand incidence is very low in the younger populations. The age-related annual incidence of RD for the population aged 10–19 years in our study was 2.4:100 000, which compares with 2.9:100 000 in the Rosner *et al* study.¹⁴

The age-specific demand incidence increases with age.¹⁵ There is a high age-specific demand incidence in the 50–79-year-old male group and in the 60- to 80+ -year-old female group in the Campinas catchment area. This compares with the majority of studies of RD incidence.^{15,16} As stated by Mowatt *et al*,¹⁵ the age structure of the local population needs to be taken into account when planning vitreoretinal services.

Nontraumatic phakic detachments were the most common type of RD which compares to other studies.^{15,17,18} In our study, the demand incidence of phakic nontraumatic RD was 7.1:100 000, which is comparable to Wolverhampton (9.7:100 000)¹⁵ and the Kumamoto (9.8:100 000) studies.¹⁷

The demand incidence of nontraumatic aphakic RD has been low in several studies since 1990s.^{15,17} The demand incidence of this type of detachment in our study was 0.2:100 000, which was substantiated with the studies of Walsall,¹⁵ Wolverhampton,¹⁵ and Kumamoto,¹⁷ respectively, 0.1, 0.3, and 0.5 per 100 000.

The demand incidence of traumatic RD is very low. Mowatt *et al*¹⁵ reported no occurrence of traumatic aphakic detachments. This contrasts with the demand incidence rates of our study, 0.09:100 000. With respect to

gender, the incidence of the traumatic types of detachment was higher in males than that in females, 8.2% (26) and 1.2% (4), respectively.

This is the first study of demand incidence of retinal detachment in Latin Americans. Ethnic differences in demand incidence could not be studied since our population cannot be separated into isolated racial groups. Notwithstanding, gross comparison with other reports reveals that our demand incidence rates are not as low as the Black population^{15,19} and Asians¹⁵ nor as high as the Whites¹⁵ rates.

Almost one third of all patients seeking treatment presented inoperable cases of retinal detachments. This appears to be a problematic compound of deficiencies in the referral chain with patients of lower socio-economic status who tend to be less-informed. Properly designed future studies are needed to elucidate these problems.

There are several limitations to this study. This is a hospital-based study and it represents a selected sample of the general population.¹ Demand incidence underestimates the true incidence of the disease,¹⁷ it is possible that a number of patients with RD seek for private treatment,²⁰ and patients from peripheral areas may be referred elsewhere.¹⁵ However, demand incidence is an important indicator of health need for acute conditions causing sudden sensory loss.²¹

The data presented herein demand attention if the patterns and incidence of retinal detachment are to be understood. Such data are important to plan and implement vitreoretinal services taking into account the population likely to be served. Implicit in our discussion is that the limited resources force priorities in the public health. This prioritizing will require greater information regarding population values and the quantifiable financial costs.

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