Prevalence of refractive errors and eye diseases in quilombo São José da Serra – Valença – RJ

Prevalência de ametropias e oftalmopatias no quilombo São José da Serra – Valença – RJ

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ABSTRACT

***Objective**: To determine the prevalence of refractive errors and eye diseases in the population of the Quilombo São José da Serra – Valença – RJ. **Methods**: We examined 92 individuals in a population of 102 people in the community Quilombo São José da Serra. All patients underwent complete ophthalmologic examination including anamnesis, ectoscopy, visual acuity, stereopsis test, red reflex, cover/uncover test, Hirschberg test, manifest and dynamic refraction, biomicroscopy, tonometry (Goldmann and air puff tonometry), direct monocular /or indirect binocular fundoscopy. **Results**: We examined 90.19% of the population quilombola, and 61.95% were female and 38.04% male. Ages ranged from 6 months to 89 years. Refractive errors were found requiring optical correction in 23.91% of individuals, being more frequent presbyopia associated with hyperopia, myopia and / or astigmatism with a prevalence of 59.09%, followed by presbyopia isolated in 22.72%, hyperopic astigmatism in 13.63% and myopic astigmatism in 4.54%. The ophthalmopathies observed were senile cataracts in 7.61%, refractive amblyopia in 6.52%, atrophy of the retinal pigment epithelium and peripapillary atrophy in 2.17%, glaucoma 1.09%, pterygium in 1.09%, retinochoroiditis toxoplasmosis in 1.09% and hypopigmentation retinal (ocular albinism) in 1.09%. **Conclusion**: The prevalence of ametropia and eye diseases in the Quilombo São José da Serra were 23.9%(22/92) and 20.6%(19/92), respectively.*

***Keywords:** Prevalence; Refractive errors: Eye diseases; Quilombo*

RESUMO

Objetivo: Determinar a prevalência das ametropias e oftalmopatias na população do Quilombo São José da Serra – Valença – RJ. **Métodos:** Foram examinados 92 indivíduos de uma população de 102 pessoas da comunidade Quilombola em São José da Serra. Todos foram submetidos à avaliação oftalmológica completa, incluindo anamnese, ectoscopia ocular, medida da acuidade visual, teste de estereopsia, reflexo vermelho, cobertura monocular, Hirschberg, refração objetiva, subjetiva, biomicroscopia, tonometria de aplanação de Goldmann^{R}, tonometria de sopro e fundoscopia direta ou binocular indireta usando lente de 20D. **Resultados:** Foram examinados cerca de 90,19% da população quilombola, sendo 61,95% do sexo feminino e 38,04% do sexo masculino. A idade variou de 6 meses a 89 anos. Foram encontrados ametropias com necessidade de correção óptica em 23,91% dos indivíduos sendo mais frequente a presbiopia associada à hipermetropia, miopia e/ou astigmatismo com prevalência de 59,09% dos indivíduos examinados, seguido da presbiopia isolada em 22,72%, do astigmatismo hipermetrópico em 13,63% e do astigmatismo miópico em 4,54% dos examinados. Em relação às oftalmopatias encontraram-se catarata senil em 7,61%, ambliopia refracional em 6,52%, atrofia do epitélio pigmentar da retina e atrofia peripapilar em 2,17%, glaucoma em 1,09%, pterígio em 1,09%, retinocoroidite por toxoplasmose em 1,09% e hipopigmentação retiniana (albinismo ocular) em 1,09%. **Conclusão**: A prevalência das ametropias e doenças oculares no Quilombo São José da Serra foi de 23,9%(22/92) e 20,6%(19/92), respectivamente.

Descritores: Prevalência; Ametropias; Oftalmopatias; Quilombo

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Introduction

Quilombos (maroon settlements) are populations with particular forms of social organisation occupying certain regions in Brazil. These communities are generally located in rural areas, are relatively isolated, and present social and health inequalities. Due to the way slavery was abolished in Brazil, these communities usually have difficult access to goods and services[1].

Since 2003, the Federal Government has been seeking to improve the quality of life of *quilombola* (maroon) populations through the *Brazil Quilombola Programme* (PBQ). The programme is focused on ensuring the right to land, basic documentation, housing, food, education, and health, among others[2]. The Ministry of Health has implemented health policies focused on this population, which motivated the study of their visual health.

In total, 3524 quilombola communities exist countrywide, of which 1342 have been certified by the Palmares Cultural Foundation[2]. At least 15 quilombola communities are known to exist in the State of Rio de Janeiro. The ocular health profile of this population is unknown, which justifies this study[3,4].

Quilombo São José da Serra, located in the district of Santa Isabel in the municipality of Valença/RJ, consists of 16 families and a total population of 102 people. The community is not covered by any health care programme and has no access to ophthalmic care; furthermore, no epidemiological studies have been conducted to assess refractive errors and eye disorders in this population. Our study sought to provide ophthalmic care, distribute free corrective lenses, and ensure care at a specialist centre (Benjamin Constant Institute, Ministry of Education) to selected patients.

This work aims to prevent blindness and promote eye health, contributing to the implementation of public health policies for eye health in isolated communities. It also helps to implement Ordinances 958/GM 288 of 15 May 2008 and 288/SAS of 19 May 2008 — the former establishes the National Policy for Ophthalmic Care and the latter regulates educational activities, visual acuity testing, medical visits, and other ophthalmic primary care actions[5,6].

Objective

To determine the prevalence of refractive errors and other eye disorders in the population of quilombo São José da Serra.

Methods

This was a cross-sectional study to determine the prevalence of refractive errors and eye disorders in quilombo São José da Serra at the Santa Isabel district in the municipality of Valença, Rio de Janeiro. All community residents, totalling 102 people, underwent ophthalmic examination.

Visual acuity testing was performed by 3 previously-trained medical students. Other ocular tests were performed by three residents in ophthalmology, and the whole process was supervised by two professors of ophthalmology.

The results were analysed statistically with Excel 2007, using the chi-square test and a significance level for statistical association of 0.05.

Ophthalmic examination

All subjects underwent complete ophthalmic evaluation including:

1- Targeted medical history;
2- Ophthalmic ectoscopy;
3- Visual acuity (VA) testing with and without correction;
4- Red reflex examination with a direct ophthalmoscope;
5- Titmus stereo test;
6- Motor examination;
7- Alternate monocular cover test;
8- Hirschberg test;
9- Objective refraction under cycloplegia (if necessary);
10- Subjective refraction;
11- Biomicroscopy of the anterior segment (Z. Milder test and tear film break up time [BUT] if the patient had symptoms of partial or total epiphora or dry eye syndrome, respectively);
12- Goldmann applanation tonometry and non-contact tonometry;
13- Direct and indirect fundus examination under mydriasis with a Schepens helmet and a 20 D lens.

The diagnostic criteria for refractive errors, anisometropia and amblyopia[7-10] were:

1- Ametropia: refractive error equal to or greater than 0.5 D per eye;

2- Anisometropia: a difference of at least 2 D between the two eyes, without strabismus;

3- Amblyopia: corrected VA (ETDRS chart) equal to or less than 0.8 in the worst eye, including refractive, anisometropic, strabic forms and ex anospia. In refractive forms, we considered that refractive errors needing correction were those with equal to or greater than +2.0 D, -1.00 D, or -1.00 D cyl in the better eye, under cycloplegia from 75 cm, discounting 1.5 D from the distance and 1.0 D from cycloplegia[11,12].

The diagnosis of the different eye disorders was based on the following criteria[11, 13]:

1- Disorders of the eyelids, lacrimal apparatus and orbit: Diagnosis based on targeted ophthalmic examination; patients complaining of partial or total epiphora underwent the Zappia-Milder test, while those with ptosis had their palpebral fissure measured;

2- Disorders of the conjunctiva, cornea, lens, and iris: diagnosis based on biomicroscopy of the anterior segment; the criterion for dry eye syndrome was a BUT under 10 seconds;

3- Strabismus: Diagnosis based on obvious ocular misalignment;

4- Glaucoma: Diagnosis of suspected cases when intraocular pressure was higher than 21 mmHg and/or a cup-to-disc ratio greater than 0.7;

5- Disorders of the choroid and retina: diagnosis based on direct and indirect fundus examination using a Schepens helmet and a 20 D lens.

Ethical aspects

The study was conducted according to the Guidelines and Rules on Research Involving Human Subjects (Resolution 196/1996 of the Brazilian National Health Council) and was submitted to and approved by the Research Ethics Committee of the Valença Medical School. Each study participant provided their Free and Informed Consent.

Results

From a population of 102, we examined 92 individuals (90.19%) aged between 6 months and 89 years. Thirty-five (38.04%) were male and 57 (61,95%) were female. Most patients were aged 0-10 years (30.43%). Figure 1 shows the age

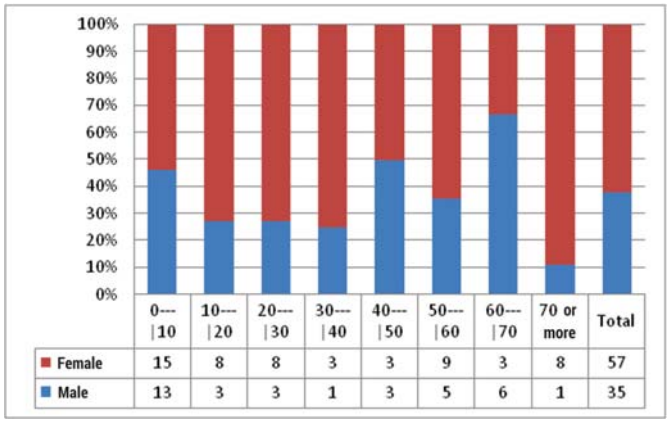

Figure 1. Distribution of study participants according to gender and age (Quilombo São José da Serra, Valença/RJ, 2010)

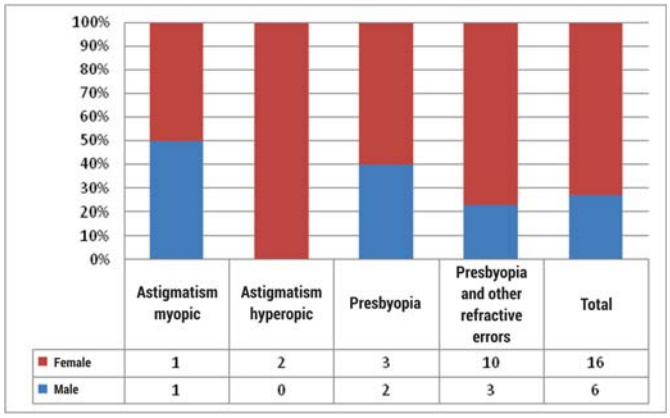

Figure 2. Distribution of patients with refractive errors requiring correction, according to gender (Quilombo São José da Serra, Valença/RJ, 2010)

distribution of the sample.

Forty-one (44.56%) patients had a normal examination, 22 (23.91%) had refractive errors requiring optical correction, 22 (23.91%) had refractive errors not requiring optical correction, and 19 (20.66%) had other eye disorders. Some patients had more than one diagnosis.

Of the 22 subjects with refractive errors requiring optical correction, 16 (72.72%) were female and 6 (27.27%) were male. Seventeen subjects older than 50 years had refractive errors (77.27%). Figure 2 shows the distribution of patients with refractive errors who were prescribed corrective lenses according to gender, and Figure 3 shows their distribution according to age. The prevalence of eye disorders is shown in Table 1. No individual had an isolated spherical error.

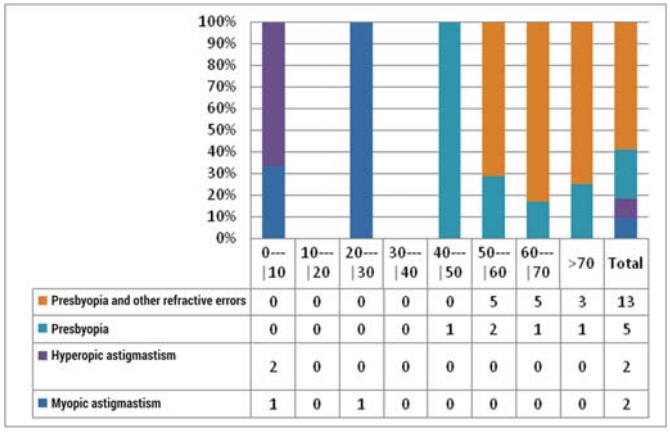

Figure 3. Distribution of patients with refractive errors requiring correction, according to age (Quilombo São José da Serra, Valença/RJ, 2010)

Discussion

The study population is an African-Brazilian community located in a remote area and without any access to ophthalmic care. There are no available data on the general and eye health of this population.

This study examined 90.19% (n = 92) of the population of Quilombo São José da Serra in the municipality of Valença/RJ. Most subjects were female (n = 57, 61.95%) similar to other studies.[14,15] Most subjects were aged 0-10 years (n = 28, 30,43%); the second largest age group was 50-60 years (15.22%, n = 14); 4.34% (n = 4) of patients were aged 30-40 years; and 6.52% (n = 6) were aged 40-50 years (Figure 1). The small number of subjects in the most economically-active age group suggests that there may be migration of people to urban centres in order to ensure the survival of the quilombo as a territorial and cultural centre. According to Carril (2006), older residents mention the lack of young adults in this rural quilombo, contrasting it with a past of abundance and cooperative joy after the end of slavery.[16]

In total, 44.56% (n = 41) of subjects had a normal eye examination; the most prevalent eye disorders were refractive errors with 47.83% (n = 44), and only 20.66% (n = 19) of subjects had other eye disorders. Of the 92 examined subjects, 23.91% (n = 22) were prescribed glasses. Studies on ophthalmic demand in primary care considering all age groups found only 8.1% of normal eye examinations and a 70% prevalence of refractive errors.[14] These differences are probably due to the referral of patients with eye disorders and suppressed demand for the primary care referral centre in question. The vast majority of studies in Brazil assessed refractive errors requiring optical correction in children and found varying prevalences: 3.5%[17], 4.56%[18], 6.33%[19], 14.11%[20], 15.27%[21]. In our study, the prevalence of refractive errors requiring corrective lenses in children younger than five years old was zero, and among children aged 5-10 years it was 13.64% (n = 3). Comparison with other studies is almost impossible, as other studies examined different age groups and used different methods. Some authors suggest to standardise the reporting of causes of visual loss in children, which would allow comparative analyses as well as detecting changes in the patterns of causes[22].

Among subjects with refractive errors, only 23.91% (n = 22) required optical correction. Most patients requiring optical prescriptions were adult or elderly: 4.54% (n = 1) for subjects aged 20-30 years with hyperopic astigmatism; 4.54% (n = 1) for subjects aged 40-50 years with isolated presbyopia; and 77.27% (n = 17) for subjects older than 50 years with presbyopia, of which 18.18% (n = 4) had isolated presbyopia and 59.09% (n = 13) had presbyopia associated with other refractive errors (Figure 3).

Several other studies found a similar pattern in the distribution of refractive errors among children[8,17,18,20-24], with a

Table 1

Prevalence of eye disorders among study subjects (Quilombo São José da Serra, Valença/RJ, 2010)

Eye disorder	N	Prevalence in the examined population(%)	Relative frequency with regard to the total number of eye disorders (%)
Senile cataract	7	7,61	36,84
Refractive amblyopia	6	6,52	31,58
Glaucoma	1	1,09	5,26
Pterygium (monocular)	1	1,09	5,26
Congenital chorioretinitis (binocular) (toxoplasmosis)	1	1,09	5,26
Retinal hypopigmentation (albinism)	1	1,09	5,26
RPE/peripapillary atrophy	2	2,17	10,52
monocular (monocular)	1	1,08	5,26
binocular (binocular)	1	1,08	5,26
Total	19	20,66	100,0

(*)RPE, Retinal pigment epithelium

predominance of positive refractive errors (hyperopia and hyperopic astigmatism) followed by negative refractive errors (myopia and myopic astigmatism). Recent studies on preschool children covered by the FHP (Family Health Program) in Lapa/RJ reported a 33.3% prevalence of refractive errors in 2007[25] and 61.8% in 2010[26]. According to the authors, this is explained by the absence of eye health campaigns and the various problems found in the reference and counter-reference systems of the Brazilian public health system, where there are no criteria for measuring vision[26]. Compared with these previous studies, the prevalence of refractive errors in children aged 5-10 years in Quilombo São José is was low (13.63%).

The prevalence of amblyopia varies in the literature, ranging from 1 to 10%[17,20,23,25-33]. In 1977, Scarpi[8] found a prevalence of 4.07% among students in São Paulo. In 2001, Neurauter[34] found a prevalence of 1.39% among children in Southern Rio de Janeiro. In 2001, Schimiti[18] found a prevalence of 76% in Ibiporã. In 2007, Couto Jr.[17] found a prevalence of 2.0% among children in the slums of Rio de Janeiro. Lopes[32] found that 3.6% of public school students and 5.9% of private school students from the city of Londrina had amblyopia. In 2005, Portes[25] found a prevalence of 8% among children covered by the FHP in Lapa, Rio de Janeiro. In 2010, Oliveira[26] reported a 10% prevalence of amblyopia among 93 children aged 3-6 years also covered by the FHP in Lapa, RJ. In 2006, Jeveaux[23] found a prevalence of 4.1% among children covered by the FHP in Morro do Alemão, in Rio de Janeiro. In 2010, Couto Jr.[21] found a prevalence of 2% after screening 1800 children in Duque de Caxias/RJ. Our study examined all age groups and is found a 6.52% prevalence of refractive amblyopia (Table 1). Of these subjects, 4 were children and only 2 were adults. Therefore, the prevalence of amblyopia in Quilombo São José da Serra was similar to other regions in the country or even lower. For example, the prevalence among children covered by the FHP in Lapa, Rio de Janeiro, was 8-10%.

As regards cataract, we only found the senile type, with a prevalence of 7.61% (Table 1). In a recent study on the causes of blindness and low vision in the urban areas of Latin America, cataract was the leading cause of bilateral blindness in people over 50 years. In that study, most causes were curable (43-88%) and preventable (52-94%)[35]. A 2010 study on primary care units in Luiz Antonio, São Paulo, found a prevalence of 4.9% for senile cataract.[14] This lower prevalence compared to Quilombo São José is due not only to the fact that that primary care unit is close to a large public university service which allows easy access to surgery, but also to the fact that the community of Quilombo São José is relatively isolated and has no access to primary health care.

As regards pterygium, a prevalence of 8.2% has been reported in a Nigerian rural population.[36] Vargas[14] reported a prevalence of 6.7% in an urban primary care clinic in a region where the cultivation of sugar cane and slash-and-burn agricultural practices are common. In 2010, Shiratori[37] found a prevalence of 8.12% for pterygium in the city of Botucatu/SP. Recently, while studying riverine populations in the Solimões and Japurá rivers in the Brazilian Amazon, Ribeiro[38] found some of the highest rates of pterygium in the world: 21.2% in the general population and 41.1% in adults older than 18 years. The 1.09% prevalence of pterygium found in Quilombo San José is low compared to other regions in Brazil and to the black rural population in Nigeria (8.2%). Studies on the global distribution of the condition showed a direct relationship between prevalence and living close to the equator[39]. Perhaps the small sample in our study may have influenced the low prevalence.

We also found a 1.09% prevalence for glaucoma, similar to the 1.3% reported by Vargas[14] in a primary care unit in Luis Antonio/SP. Sakata[40] found a 3.4% prevalence for glaucoma in southern Brazil using the same diagnostic methods from our study (flashlight, slit lamp, Goldmann applanation tonometer, direct ophthalmoscope). The small number of subjects aged 20-50 years may explain this low prevalence in Quilombo São José.

Of all eye disorders (Table 1), the most prevalent was senile cataract with 36.84% (n = 7) followed by refractive amblyopia with 31.58% (n = 6). These disorders also coincide with the largest age groups (children and elderly subjects) in the study sample.

The results of our study are probably the first data on the eye health profile of a quilombola population in Brazil. This study will help overcome the so-called "harmful demographic and epidemiological invisibility" of certain isolated populations, including quilombolas[5].

Conclusion

The lack of studies and data on the eye health of quilombola populations highlights the relevance of conducting research to assess epidemiological indicators in order to implement public policies aimed at providing equal access to health care and improving the general living conditions of these groups. Therefore, the present study, which assessed the prevalence of various eye disorders and refractive errors in quilombo São José da Serra, Valença/RJ, helps inform public health decision-making toward this population and similar groups, demonstrating the effectiveness of specialist ophthalmic examination in such underprivileged communities. The study also shows that it is possible to provide ophthalmic primary care as recommended by the National Policy for Ophthalmology of the Brazilian Ministry of Health.

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