

Eye care challenges in the archipelago of Fernando de Noronha, Brazil

Desafios do cuidado aos olhos no arquipélago de Fernando de Noronha, Brasil

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Vision impairment is considered a global health concern, as around 246 million people worldwide have low vision.⁽¹⁾ In remote areas, the lack of access to an ophthalmologist and the absence of diagnostic technology from urban centers have a negative impact on the screening and monitoring of various eye diseases.^(1,2)

In this sense, our team conducted an eye care taskforce in November 2024, in the archipelago of Fernando de Noronha, located approximately 350 kilometers off the Brazilian coast, in the State of Pernambuco in Brazil, with an estimated population of 3,167. During the eye care campaign in Fernando de Noronha, we conducted an analytical and cross-sectional study focused on identifying the main ophthalmic needs of the island's inhabitants.

A total of 222 patients with a mean age of 54.7 ± 12.3 years (range: 14 to 84 years) were examined. The main ophthalmological conditions affecting the island's inhabitants were refractive errors ($n = 36$; 16%) and inflammatory conjunctival diseases ($n = 36$; 16%), followed by glaucoma or suspected glaucoma ($n = 35$; 15.7%). Cataracts ($n = 23$; 10%) and pterygium ($n = 25$; 11%) were less prevalent but still present.

A notable similarity was observed between the epidemiological findings of our taskforce and the findings reported by Singh et al.⁽²⁾ of the Andaman and Nicobar Island. The study conducted via eye camps examined 591 patients over 2 years and identified a high prevalence of refractive errors (35%), cataracts (22%), and inflammatory conjunctival diseases (15%), along with other conditions such as glaucoma and uveitis.⁽¹⁾ Therefore, we hypothesize that these ophthalmological alterations observed in both settings are primarily due to environmental conditions that contribute to ocular surface diseases, such as dry climates and prolonged exposure to solar radiation.⁽³⁾

It is noteworthy that the island's inhabitants lack follow-up care and have limited access to diagnostic and therapeutic technologies available in major mainland ophthalmology centers.⁽³⁾ Moreover, considering that uncorrected refractive errors are a significant cause of reversible vision impairment, many archipelago inhabitants have refractive errors but have never undergone refraction testing. These unaddressed conditions result in work-related limitations, which can impact the island's economy.⁽⁴⁾

Although the State government allows Fernando de Noronha island's inhabitants to travel to the mainland for healthcare, bureaucratic hurdles often hinder these visits. In light of this discussion, various studies have increasingly advocated for using teleophthalmology and artificial intelligence to promote ocular health in remote areas.⁽⁵⁾ Telemedicine is effective in published studies, offering the possibility of early diagnosis for conditions such as glaucoma and diabetic retinopathy through portable fundus cameras, for example.⁽⁵⁾ Practicing ophthalmology in remote areas is

challenging, requiring strategies to provide the best possible ophthalmological care using limited diagnostic and therapeutic resources.

In conclusion, the population of Fernando de Noronha faces limited access to eye care due to the relative isolation from the mainland with restricted medical supplies and services. The identification of the primary ophthalmological demands of these populations is the first step toward delivering more objective, personalized, and cost-effective care.

AUTHORS' CONTRIBUTION

Cunha CEX contributed to the conception and design of the study, analysis, and interpretation of results, writing and critical review of the manuscript's content. Regueira SP, Ventura CV contributed to the analysis and interpretation of data, writing and critical review of the manuscript's content. All authors approved the final version of the manuscript and are responsible for all aspects of the manuscript, including ensuring its accuracy and integrity.

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