

# Visual Complaints and Habits During the COVID-19 Pandemic in Portugal

## Queixas e Hábitos Visuais Durante a Pandemia de COVID-19 em Portugal

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### ABSTRACT

**INTRODUCTION:** This study reports type of visits realized during 2020 in Portugal, population habits, and eye complaints regarding visual health in the COVID-19 pandemic context.

**MATERIAL AND METHODS:** An email invitation to an online cross-sectional survey and also performed to patients from ophthalmology clinics in Portugal from September/November 2020.

**RESULTS:** Eight hundred thirty three respondents (66% females) aged more than 18 years-old, participated with valid anonymous responses. Of the total number of respondents, 54% identified a lot of discomfort caused by increasing dry eye symptoms according to more intense digital work and lens fogging up when using masks. A percentage of 90% of the respondents used digital devices at least 3 hours on average per day, and 33% started using digital devices more than 8 hours on average per day. In addition, 44% of respondents felt that their near vision had worsened in this period. The first major symptom of presbyopia was related to difficulty reading smaller letters in packages; 90% had the first symptoms after the age of 40. The most frequent ametropia identified were astigmatism (47%) and myopia (43%). For parents, having good eyesight (79.5%) was the most valued aspect of their children's lives.

**CONCLUSION:** The findings provide an idea of the challenges during COVID-19 for eye practices. In a society highly dependent on vision, it is essential to focus on signs and symptoms that lead to ophthalmologic conditions. The excessive use of digital devices and the use of masks during this pandemic has aggravated some pointing the importance of reference to plan efficient eye care in similar situations.

**KEYWORDS:** COVID-19; Pandemics; Quarantine; Vision Disorders.

### RESUMO

**INTRODUÇÃO:** Pretendemos avaliar os hábitos e queixas relativas à saúde visual, num contexto de pandemia como o COVID-19, em Portugal.

**MATERIAL E MÉTODOS:** Inquérito acessível através da participação voluntária *online* durante 3 meses, setembro/novembro de 2020, divulgado através das redes sociais, com recolha

realizada também em clínicas de oftalmologia.

**RESULTADOS:** Participaram 833 inquiridos de ambos os sexos (66% do sexo feminino), com idade acima dos 18 anos. Dos inquiridos, 54% referiu muito desconforto causado pelo aumento dos sintomas de fadiga e olho seco de acordo com o trabalho digital mais intenso bem como o embaciamento da lente dos óculos, em consequência ao uso da máscara. Um total de 90% começaram a usar dispositivos digitais pelo menos 3 horas e mais especificamente, 33% passaram a usá-los mais de 8 horas por dia. As ametropias mais frequentemente identificadas foram o astigmatismo com 47% e a miopia 43%. Referiram baixa de acuidade visual ao perto neste período, 44%. A principal manifestação de presbiopia estava relacionada com a dificuldade em ler letras pequenas nas embalagens; 90% teve os primeiros sintomas a partir dos 40 anos. Para os pais, ter boa visão (79,5%), foi o aspeto que mais valorizam na vida dos seus filhos.

**CONCLUSÃO:** Numa sociedade que vive estruturada de acordo com a visão, é essencial suprimir o hábito de não dar a devida importância aos sinais e sintomas que levam ao agravamento e a uma condição oftalmológica pré-existente. Isto verificou-se devido ao uso e abuso de dispositivos digitais agravados pelo confinamento e o uso da máscara durante a fase de pandemia de COVID-19.

**PALAVRAS-CHAVE:** COVID-19; Pandemia; Perturbações da Visão; Quarentena.

## INTRODUCTION

In December 2019, COVID-19 appeared in China, and from there, it expanded, creating a pandemic in March 2020. Portugal announced successive lockdowns restricting population movement, social interactions, and working practices. Ophthalmologists were identified as essential workers and permitted to undertake eye care. The pandemic has changed population habits and eye complaints in part for using face masks and personal protective equipment (PPE).<sup>1-3</sup>

This study aimed to characterise the experiences of Portugal-based primary care ophthalmologists during the COVID-19 pandemic adapting to patients' needs, developing a better understanding of patient complaints to facilitate resource allocation and interests.

## MATERIAL AND METHODS

**Study design:** A cross-sectional survey was used to investigate the impact of the COVID-19 pandemic on eye practices in Portugal. Ethical approval was granted. Respondents gave informed consent online at the start of the survey, and the study was conducted following the tenets of the Declaration of Helsinki 2013.

**Survey development:** The survey questions were generated by a research team of eye care professionals, identifying questions focused on the pandemic implications in patients' requirements, complaints, and refraction needs.

**Survey distribution:** The survey was uploaded to the online platform to disseminate and was open from September to November 2020. Inclusion criteria were patients older than 18 years receiving eye care in Portugal affected by the pandemic outbreak. Participants were directed to an encrypted data website where they indicated their consent

to participate after reading an information sheet.

**Data analysis:** Data cleaning was initially undertaken to remove cases that did not meet study eligibility. The Statistical Package for Social Sciences (SPSS) used quantitative data analysis, using descriptive statistics, including frequencies, means, and standard deviations.

## RESULTS

A total of 833 participants participated in the study, females 551 (66.1%), and males 282 (33.8%). The age distribution in groups was <30 years: 162, 30-34 years: 57, 35-39 years: 81, 40-44 years: 145, 45-49 years: 158, 50-54 years: 96, 55-59 years: 61, >60 years: 73.

More than half of the population (54%) identified a lot of discomforts caused by increasing dry eye symptoms according to more intense digital work and lens fogging up when using masks. Almost all the respondents, 90% used digital devices at least 3 hours on average per day, and 33% started using digital devices more than 8 hours on average per day.

A percentage of 44% of respondents felt that their near vision had worsened in this period. The first major symptom of presbyopia was related to difficulty reading smaller letters (50.4%) (Fig. 1); 90% had the first symptoms after the age of 40. After 45 years of age, about 75% wear progressive lenses for correction/compensation. Ensuring good visual health was the main cause for wearing glasses for 92% of respondents. The respondents checked their visual health once a year, 34.9%, every 2 years 30%, between 2 and 5 years 17.4%, only when there is a problem 16.2%, or rarely 1.4%. The professional consulted for an eye assessment was the ophthalmologist 61.94%, optometrist 45.62% 380, orthoptist 8.52%, occupational medicine 6.36%, or GP 0.72% (the question allowed multiple answers).

The most frequent ametropia identified and pointed to be cause of eye impairment were astigmatism (47%) and myopia (43%). Two hundred ninety eight respondents had children under 16 years, and 87% were concerned for their children's visual health, and 90.3% thought they could identify the symptoms of myopia in their children. More than 90% identified screens as a risk factor for myopia development; however, only 55% stated the importance of limiting the use of these devices. For parents, having good eyesight (79.5%), good oral hygiene (78.2%), and healthy eating (77.2%) are the aspects they value most in their children's lives (Fig.2).

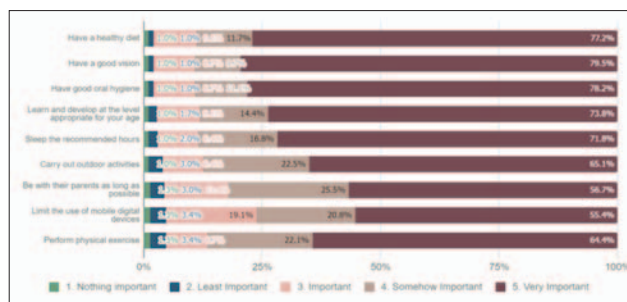


Figure 2. Main concerns for parents regarding their children's health, on a scale 1 (nothing important) to 5 (very important).

## DISCUSSION

COVID-19 has changed many of our habits; the main changes in visual needs have been digital use and secondary dry eye and myopia progression.

Digital eye strain (DES) is related to accommodative or binocular vision stress and symptoms associated with dry eye.<sup>4</sup> The extensive use of computers and digital devices creates problems in 90% of the users. Increased screen time can cause eye discomfort, fatigue, blurred vision, and headaches. DES prevalence is higher in individuals who spends >4 hours per day on digital devices.<sup>5</sup> This can be due to decreased blinking, visual focus and stress, and other factors like poor lighting, glare, improper posture, and refractive errors. Habitually, the person is aware of the problem when the visual demands of the task exceed. A wide range of options is proposed, including correction of refractive errors, dry eye treatment, screen breaks, vergence, and accommodative correction.

The DES has increased during the pandemic,<sup>6</sup> with an increase of screen time over 40%<sup>7</sup> to 50%,<sup>8</sup> presenting 78% eye strain.<sup>9</sup> In some series, 93.6% of respondents reported an increase in their screen time since the lockdown with an average increase of  $4.8 \pm 2.8$  h per day, representing a total usage per day of  $8.65 \pm 3.74$  hours. Almost all respondents, 95.8%, had experienced at least one symptom related to digital device usage, and 56.5% said that the frequency and intensity of these symptoms increased since the lockdown.<sup>10</sup>

The results of our study are in the same direction, with 90% of the respondents using screens for more than 3 hours daily, and by increasing dry eye symptoms a 54%.

Myopia progression has risen related to extended digital screen time, near work, and limited outdoor activities

aggravated since the pandemic. The changes in daily habits increasing the use of digital devices can have a lifelong impact on development. So, it is essential to promote awareness among parents to lessen myopigenic habits that may become entrenched during the pandemic. Close collaboration with parents is necessary to promote myopia control policies.<sup>11-17</sup>

The results of our study are in the same direction, with 90% of the parents identifying screens as a risk factor; however, only 55% consider limiting the use of these devices.

## LIMITATIONS OF THE STUDY

The study has limitations as an online survey, the distributed population cannot be described, and respondents with biases may select themselves into the sample. The study was coordinated through eye practices to decrease these methodological limitations. Moreover, our study was a symptom-based questionnaire not relating to the eye examination, frequency, and the intensity of the symptoms experienced. This was a subjective opinion and varied from one person to another, and the conditions of use, masks can affect it as well, and the relationship with dry eye. The questions were adapted to engage the participants.

The subjects participated anonymously without a correlation with an eye examination, refraction, pre-existing refractive errors, or ocular surface disorders that could contribute to the presentation of the complaints experienced. The study focused on symptoms, so many people with advanced dry eye may only complain of mild symptoms, leading to underdiagnosis in a self-reported survey.<sup>18</sup>

## CONCLUSION

Our study enhances the eye problems during the pandemic, with the increased prevalence of DES due to increased screen times and related refractive complaints. This study highlights the adverse effects of digital devices on the eye and the need for parents, teachers, and children to follow good ocular practice to avoid DES and myopia progression.

## PRESENTATIONS AND AWARDS

Paper presented at the 64th SPO Congress, 2021.

## CONTRIBUTORSHIP STATEMENT / DECLARAÇÃO DE CONTRIBUIÇÃO:

SBJ: Desenho do estudo, análise dos resultados e elaboração do texto.

FMR: Pesquisa/análise bibliográfica e colaboração na elaboração do texto.

FF: Receção e análise dos dados do estudo.

AS: Desenho do estudo, participação na sua análise e conclusões.

## RESPONSABILIDADES ÉTICAS

**Conflitos de Interesse:** Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

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**Confidencialidade dos Dados:** Os autores declaram ter seguido os protocolos da sua instituição acerca da publicação dos dados de doentes.

**Proteção de Pessoas e Animais:** Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia revista em 2013 e da Associação Médica Mundial.

**Proveniência e Revisão por Pares:** Não comissionado; revisão externa por pares.

## ETHICAL DISCLOSURES

**Conflicts of Interest:** The authors have no conflicts of interest to declare.

**Financing Support:** This work has not received any contribution, grant or scholarship.

**Confidentiality of Data:** The authors declare that they have followed the protocols of their work center on the publication of data from patients.

**Protection of Human and Animal Subjects:** The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki as revised in 2013).

**Provenance and Peer Review:** Not commissioned; externally peer reviewed.

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