

## Impact of ADHD and OCD in Portuguese and Brazilian Patients with Tourette Syndrome During the COVID-19 Pandemic

### Impacto da PHDA e POC em Indivíduos Portugueses e Brasileiros com Síndrome de Tourette durante a Pandemia de COVID-19

**Keywords:** Attention Deficit Disorder with Hyperactivity; COVID-19; Obsessive-Compulsive Disorder; Tourette Syndrome

**Palavras-chave:** COVID-19; Perturbação de Hiperatividade e Défice de Atenção; Perturbação Obsessivo-Compulsiva; Síndrome de Tourette

Starting in China, in 2020, COVID-19 spread all over the world, affecting the mental health of billions of people. Tourette syndrome (TS) is a neurodevelopmental disorder defined by multiple motor and at least one phonic tic.<sup>1</sup> Around half of the patients with tics reported an exacerbation during the COVID-19 pandemic.<sup>2-4</sup> Comorbidity with attention-deficit/hyperactivity disorder (ADHD) and/or obsessive-compulsive disorder (OCD) is as high as 90% in TS and exacerbates the clinical expression.<sup>1</sup> Contextual changes such as those imposed by the COVID-19 pandemic (e.g., fear, disruption of routines, and isolation) also affect tic severity. Studies show that both comorbidities and socioeconomic factors influenced the clinical course of tics during the pandemic.<sup>2,3</sup> In Portugal, a perceived increase in tics and related manifestations, including functional tics, raised the attention of social media (e.g., *Revista Sábado*, October 31<sup>st</sup>, 2021, and *Jornal Observador*, November 21<sup>st</sup>, 2021). The Portuguese TS Association reported an increasing call for help from families and individuals with TS, which created the need for further research.

Our study aimed to investigate the role of ADHD and OCD in tic severity during the COVID-19 pandemic, in Portuguese and Brazilian patients with TS (approved by the Ethics Committee of the Coimbra Hospital and University Center). Between July and December 2021, through the social media of the Portuguese and Brazilian TS Associations, we assessed 22 Portuguese-speaking individuals with TS (68% male, 32% female; age range between 16 and 54 years old) with the Portuguese versions of the Adult ADHD Self-Report Screening Scale—version 1.1 and the Obsessive-Compulsive Inventory—Revised. Participants graded their tic severity during the outbreak on a 5-point Likert scale. Descriptive, Spearman-correlation, and Mann-Whitney-U analyses were conducted using the software SPSS, version 26.

Approximately half of the participants (54.5%) reported that their tics were a little (31.8%) or much worse (22.7%) since the outbreak. Eight patients (36.3%) reported that their tics remained stable, and 9.1% perceived a slight improvement. Self-reported tic worsening correlated with more ADHD ( $r = 0.602$ ,  $p = 0.003$ ) and hoarding ( $r = 0.425$ ,  $p = 0.048$ ) symptoms. Accordingly, the group of patients with TS who reported tic worsening experienced more hoarding ( $Z =$

$-2.434$ ;  $p = 0.015$ ) and ADHD ( $Z = -2.376$ ;  $p = 0.017$ ) symptoms. Between-group differences were non-significant for the other obsessive-compulsive dimensions (all  $p > 0.38$ ).

While the lack of statistically significant differences in obsessive-compulsive symptoms may simply reflect a lack of statistical power, the selectivity of our findings might also mean that hoarding and ADHD symptoms reflect an underlying phenotype,<sup>5</sup> which was more susceptible to the effects of the pandemic. Need-based hoarding (e.g., masks, soaps) may increase in response to the COVID-19 threat as a way of increasing the perception of control.<sup>6</sup> Staying at home for prolonged periods may disrupt coping strategies (e.g., sports and physical activity) of individuals with ADHD symptoms.<sup>7</sup>

Despite several limitations (e.g., the subjective nature of self-report instruments, the cross-sectional design, and the small sample size of our study), our results overlap with those of previous studies showing that a significant proportion of patients with TS experienced a worsening in their tics during the COVID-19 pandemic.<sup>3,4</sup> Furthermore, our study indicates that patients with TS suffering from hoarding and ADHD symptoms may be particularly vulnerable and may need a more thorough follow-up.

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#### AUTHORS CONTRIBUTION

AA: Conceptualization and design of the work, data acquisition, analysis and interpretation, conception of the first draft, critical review and editing of the manuscript.

FC: Data acquisition, analysis and interpretation, conception of the original draft, critical review and editing of the manuscript.

VAC, ATP: Data acquisition, analysis and interpretation, critical review and editing of the manuscript.

AM: Critical review and editing of the manuscript, supervision of the work.

#### PROTECTION OF HUMANS AND ANIMALS

The authors have followed the protocols of their work center on the publication of data. The data was anonymized and none of the authors had access to patient identification. The study was conducted in accordance with the Helsinki Declaration updated in 2013.

#### DATA CONFIDENTIALITY

The authors declare that they followed the protocols in use at their working center regarding patients' data publication.

#### COMPETING INTERESTS

AA is a member of Associação Portuguesa de Síndrome de Tourette, unpaid.

VAC is the Vice President of Associação Portuguesa de Síndrome de Tourette, unpaid.

All other authors declared no conflicts of interest.

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