

which made many Taiwanese people vigilant against COVID-19 and this has aided in COVID-19 prevention.

Higher social support may decrease uncertain and fearful feelings in the pandemic and increase confidence in coping with COVID-19. However, the familiar ways to interact with and provide social support to one another may be interrupted during a pandemic. Health professionals should develop alternative ways, such as telephone visits, to provide social support for the public, especially for those who are quarantined.

Sufficient protective equipment, information about COVID-19, financial support, and medical resources were significantly associated with higher confidence. Research also found that up-to-date and accurate health information about COVID-19 and sufficient protective equipment were associated with less psychological impact.<sup>6</sup> How to deliver information, protective equipment, and resources to all people requires planning ahead of time.

Research reported that current physical symptoms and poor self-rated health status were significantly associated with greater psychological distress.<sup>7</sup> This study found that better self-rated mental and physical health before the COVID-19 outbreak were associated with higher confidence, indicating that good health status may contribute to confronting the unanticipated pandemic with confidence.

Women had lower confidence in coping with COVID-19 than men and transgender participants. A study in Spain also found that women reported more severe distress and loneliness than men during the COVID-19 lockdown period.<sup>8</sup> Older people have poorer clinical features and prognoses than young people if infected with COVID-19.<sup>9,10</sup> Older people may also have more difficulties in obtaining the information necessary to cope with the pandemic. These disadvantages may damage older people's morale and confidence. Health-care workers may have more abundant knowledge about COVID-19 and thus have higher confidence in coping with the pandemic than non-health-care workers.

In conclusion, we found multidimensional factors related to the level of confidence in coping with COVID-19. Health professionals should take these factors into consideration when developing strategies for enhancing people's confidence in coping with RID in future.

### Disclosure statement

All authors declare that they have no conflicts of interest.

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### Supporting information



Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Table S1.** Measures used in this study and exploratory factor analysis.

**Table S2.** Confirmatory factor analysis for risk perception of COVID-19.

**Table S3.** Indices of goodness-of-fit index for confirmatory factor analysis at risk perception of COVID-19.

**Table S4.** Factors related to confidence in coping with COVID-19 verified with multivariate linear regression with 5000 bootstrapping samples.

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## Impact of Italian lockdown on Tourette's syndrome patients at the time of the COVID-19 pandemic

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In early 2020, the rapid spread of SARS-CoV-2 from China to the rest of the world produced a global pandemic affecting over 100 countries.<sup>1</sup> To limit viral transmission and mitigate the disease burden, most countries adopted lockdown measures. The Italian outbreak emerged in the north of the country (Lombardy, Veneto, and Emilia-Romagna regions) in late February 2020, and later spread to the rest of the peninsula.<sup>2</sup> A nationwide school closure was ordered on 5 March, and students and teachers have been required to switch to distance-learning programs. Disruption of daily routines and social isolation may have deleterious effects on children's health, especially for those with mental health needs and pre-existing chronic diseases.<sup>3</sup>

Chronic tic disorders (CTD) and Tourette's syndrome (TS) are childhood-onset neurodevelopmental disorders often associated with

neuropsychiatric comorbidities, especially attention deficit hyperactivity disorder (ADHD) and obsessive-compulsive disorder (OCD).<sup>4,5</sup> Children with TS and CTD could be at high risk for lockdown-related worsening of their conditions.

Patients with TS ( $n = 58$ ) and CTD ( $n = 22$ ) were recruited from the Movement Disorders Outpatient Clinic of Bambino Gesù Children's Hospital. Sixteen patients met the diagnostic criteria for ADHD (ADHD+), 18 for OCD (OCD+), and 12 for both (ADHD+-OCD+). The remaining 34 were classified as the isolated tic disorder subgroup. Other comorbidities encountered included anxiety, oppositional-defiant disorder, academic difficulties, and explosive outbursts (for details of the study design and the cohort description, see Figure S1 and Table S1 in Supporting information).

Parents and/or children were interviewed with structured telephone questionnaires. The study was approved by the local Ethical Committee and parents gave their informed consent; when directly involved in the interview, children gave their own assent.

Tic severity (according to the Yale Global Tic Severity Scale [YGTSS]),<sup>6</sup> OCD symptoms (according to the Children's Yale-Brown Obsessive-Compulsive Scale [CY-BOCS])<sup>7</sup> and new-onset symptoms were assessed during the fourth and fifth week of nationwide lockdown. Furthermore, we rated the guardian's impression of symptoms' worsening during the lockdown using a simplified 5-grade scale from *improved or unchanged to extreme worsening* (see Appendix S1).

We found a significant reduction of overall YGTSS scores (Fig. 1a) in the entire cohort with no difference among groups, comparing pre- and post-lockdown. Considering the two components of the YGTSS, we found that the overall reduction was significantly due to the YGTSS's Tic-Related Impairment score ( $-23.45\%$ ), while scores for the Motor and Vocal Tic Severity subscales (number, frequency, intensity, complexity, and interference of tics) were stable or reduced to a lesser extent.

The severity levels of obsessive-compulsive symptoms were stable before and during the lockdown (Fig. 1b) in patients with OCD symptoms (OCD+ plus ADHD+OCD+ = 30). Nevertheless, compared to the pre-lockdown period, an increasing proportion of patients presented rituals

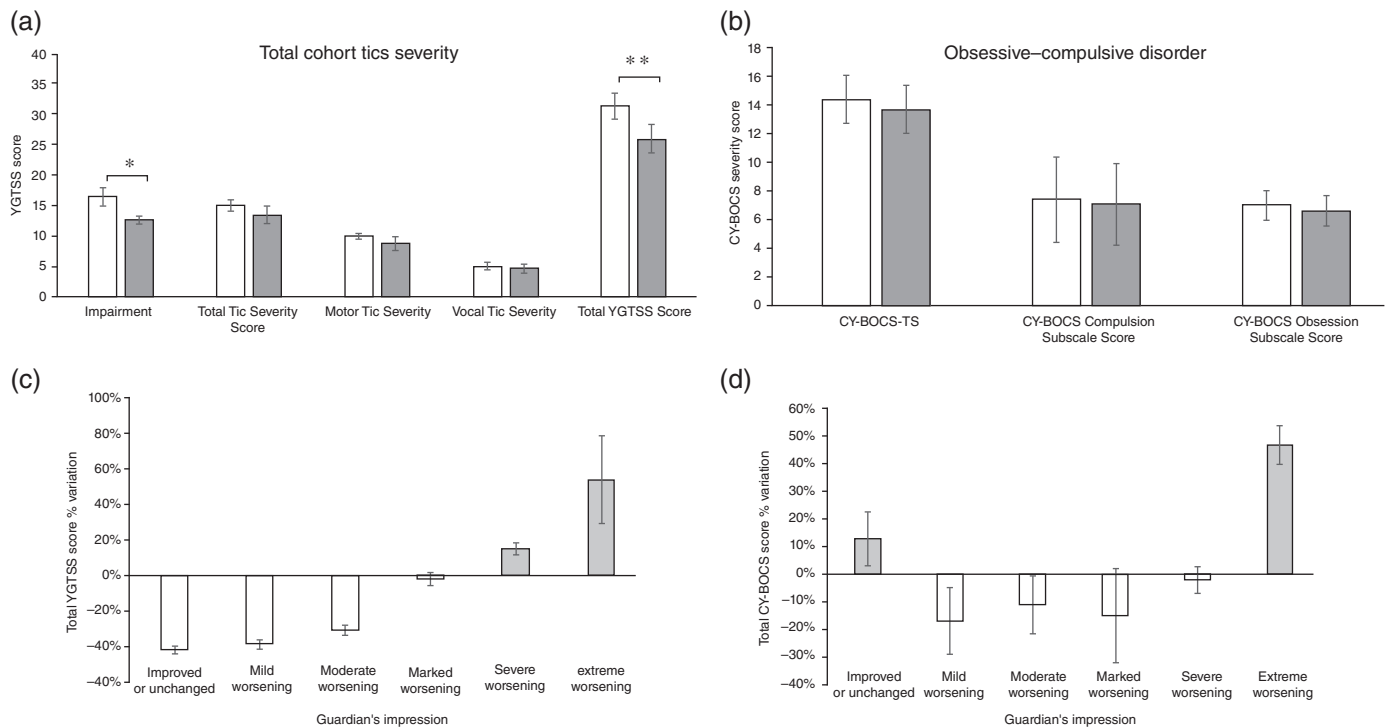
involving other persons and checking compulsions (+13.30%). Repeating behaviors were less frequently reported ( $-13.40\%$ ), whereas an increase in the frequency of contamination obsessions was encountered (+26.60%). Surprisingly, this did not coincide with an increase in washing/cleaning compulsions (see Table S2 in Supporting information for a detailed description).

New symptoms during lockdown, particularly anxiety and irregular sleep patterns, were reported in about half of the patients. Sleep disturbances, especially in the subgroups with comorbid ADHD and OCD, affected both sleep length and sleep patterns, with difficulties in falling asleep, higher rate of co-sleeping, and frequent awakenings. Both of these disturbances can be related to the lack of daily routine<sup>8</sup> and to the co-occurring anxiety (anxiety-induced insomnia).<sup>9</sup> Less frequently, previously unnoticed ADHD symptoms, explosive outbursts, or mood deflection were reported. The occurrence of explosive outbursts during school closure raises serious concerns about their management by the guardians because of the prohibition of outdoor activities and the difficulties in dealing with these rage attacks domestically. A new onset of eating disorders (restricted and increased eating habits or avoidant/restrictive food intake) was reported in the ADHD+OCD+ group (Table S3 in Supporting information).

Finally, interestingly, the contribution of tic and OCD severity to parents' impression was more evident in patients rated with the most severe degrees of worsening (Fig. 1c,d). The mismatch between parental impression and tic and OCD severity measures suggests that lockdown may exert different effects on tics and behavioral symptoms, and that global worsening could be related to other neuropsychiatric comorbidities.

In conclusion, TS and CTD patients experienced a significant reduction of tic severity, mainly due to the decrease in tic-related impairment, likely reducing the burden of tic in social context (school, playful activities). Nevertheless, prolonged social distancing led to the appearance of novel neuropsychiatric symptoms, especially in children with pre-existing comorbidities.

Although our study involves some limitations, such as its cross-sectional nature and its retrospective evaluation of the pre-lockdown



**Fig. 1** (a) (□) Pre-lockdown and (■) post-lockdown Yale Global Tic Severity Scale (YGTSS) subscale scores in the total cohort. (b) (□) Pre-lockdown and (■) post-lockdown comparison of CY-BOCS score. (c) Mean percentage change of YGTSS scores according to the guardian's impression. (d) Mean percentage change of CY-BOCS-TS according to the guardian's impression. TS, total score. Error bars indicate standard errors. \* $P < 0.05$  on paired  $t$ -test. \*\* $P < 0.01$  on paired  $t$ -test.

severity of tics and OCD, our data shed light on the need to assess the mental health burden of this unprecedented situation in vulnerable groups of children.

### Disclosure statement

Nothing to declare.

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### Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Figure S1.** Timeline of the study and the cohort description.

**Table S1.** Main demographic and clinical features of the total cohort and of the subgroups.

**Table S2.** Obsessions and compulsions before and after the lockdown.

**Table S3.** New-onset symptoms during lockdown.

**Appendix S1.** Supporting information.

## Impact of COVID-19 pandemic: Social distancing and the vulnerability to domestic violence


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The COVID-19 pandemic has serious destructive consequential effects worldwide, particularly in deaths and economic burdens. Travel restrictions, social isolation, stay-at-home orders, and quarantines were adopted to curb the spread of the virus and minimize harm. Due to its proximity and the number of flights arriving from China, Taiwan was expected to have the second highest number of cases after the index outbreak location.<sup>1</sup> Experience from the previous SARS epidemic in 2003 enabled Taiwan to respond quickly in recognizing the crisis and activating emergency management structures. Managing the crisis through implementation of border control, case identification by new technology, efficient quarantine of suspicious cases, proactive case finding, and equitable resource allocation system,<sup>1</sup> have saved Taiwan, a country with a population of 23.58 million, from the risk of the second-highest importation to 451 cases of COVID-19, presenting with a low case fatality rate at approximately 1.55%, as of July 10 2020.<sup>2</sup>

However, lockdown, social distancing, and stay-at-home policies are leading to increased vulnerabilities regarding mental health. Serious psychological repercussions such as fear, frustration, and boredom are associated with post-traumatic symptoms, anxiety, and depression during these social isolation periods.<sup>3</sup> The aforementioned mental health issues are closely associated with domestic violence, and adds to the catastrophic milieu. The rise of alcohol consumption and alcohol sales<sup>4</sup> during the COVID-19 pandemic has also been cause for alarming given its relationship to domestic violence. More than half of domestic violence perpetrators are reported to have been affected by alcohol at the time of the incident.<sup>4</sup>

Domestic violence refers to a range of violations emanating from the household and within relationships defined by familial or emotional (former or present) attachment. A global surge in domestic violence cases since the COVID-19 pandemic outbreak has been noticed, particularly in countries with high numbers of COVID-19 reported cases, such as United States, Argentina, France, Cyprus, and Singapore.<sup>5</sup> Although Taiwan has been declared relatively safe from a formidable outbreak of COVID-19, cases of domestic violence have also spiked. A 5% increase of domestic violence cases, from 30 470 to 32 000 cases compared with the same period last year, was observed in Taiwan in the first quarter of 2020, as reported by the Ministry of Health and Welfare's Department of Protective Services.<sup>6</sup> The number of domestic violence incidents reported to police increased 13% in the first quarter of 2020, from 18 408 cases to 20 924 cases, compared with the same period last year.<sup>7</sup> Various counties/cities have experienced greater impacts of domestic violence, for instance, an increase of incidences of almost 30% arose in March in New Taipei City. Although stay-at-home orders were not implemented in Taiwan, people were encouraged to self-isolate at home to reduce social contact, and the pandemic made it difficult for people to reach out to their social networks. Heightened stress from families spending more time at home in cramped conditions, the disruption of protective networks, and the inaccessible of public services, may further exacerbate domestic violence.

The economic crisis associated with the COVID-19 pandemic is raising huge challenges worldwide. Amid the pandemic crisis, Taiwan's adjusted unemployment rate increased to 4.1% in April 2020 and this was the highest jobless rate since 2013.<sup>8</sup> To avoid laying off employees directly, employers have been allowed to negotiate with employees to reduce working hours, so-called "volunteer for unpaid leave". The number of employees who passively volunteered for unpaid leave increased to

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