



Short Communication

Medically unexplained symptoms in the times of COVID-19 pandemic: A case-report



Marco Colizzi^{a,b,c,*}, Riccardo Bortoletto^c, Marta Silvestri^c, Federica Mondini^c, Elena Puttini^c, Chiara Cainelli^c, Rossella Gaudino^d, Mirella Ruggeri^a, Leonardo Zoccante^c

^a Section of Psychiatry, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Italy

^b Department of Psychosis Studies, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom

^c Child and Adolescent Neuropsychiatry Unit, Maternal-Child Integrated Care Department, Integrated University Hospital of Verona, Italy

^d Section of Paediatrics, Department of Surgery, Dentistry, Paediatrics and Gynaecology, University of Verona, Verona, Italy

ARTICLE INFO

Keywords:

Coronavirus
2019-nCoV
Somatic symptom disorder
Anxiety
Obsessive compulsive symptoms
Child and adolescent psychiatry

ABSTRACT

In early 2020, a novel coronavirus (SARS-CoV-2) leading to a potentially fatal condition was discovered. Since then, the 2019 coronavirus disease (COVID-19) has spread worldwide becoming a pandemic. Beyond the risks strictly related to the infection, concerns have been expressed for the psychological impact that COVID-19 may have, especially on vulnerable individuals with pre-existing mental health conditions. Somatic symptom disorder (SSD) is characterized by a dysfunctional preoccupation with physical symptoms leading to excessive and unnecessary healthcare utilization. Despite being quite common, such condition remains underrecognized. We report a detailed clinical case of a 16 years old adolescent, who presented with a history suggestive of COVID-19 infection and associated psychological distress. Despite testing negative for the presence of SARS-CoV-2, his extreme and persisting health preoccupations required an inpatient admission to the Child and Adolescent Neuropsychiatric Unit. He responded rapidly to a low dose of antipsychotic and an antidepressant. Based on his medical history and current presentation, he received a diagnosis of SSD. When COVID-19-like symptoms occur, we highlight the importance of differentially diagnosing a possible exacerbation of a pre-existing SSD, triggered by fear of being infected. This may help preventing further burden to the healthcare system.

1. Introduction

In December 2019, increasing pneumonia cases of unknown etiology were reported in Wuhan (Li et al., 2020), the largest city in Central China with an estimated population of over 10 million people. Cases were traced back to the Huanan Seafood Wholesale Market with the hypothesis that patients had been infected by a pathogen transmitted by live animals. In early January 2020, a novel coronavirus, the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was identified as the cause from the analysis of the bronchoalveolar washing fluid of a Wuhan patient (Lu et al., 2020). On February 11, 2020, the World Health Organization named the SARS-CoV-2-induced illness as the 2019 coronavirus disease (COVID-19). Due to its person-to-person transmission, COVID-19 has rapidly spread worldwide (Rothe et al., 2020), becoming a public health emergency of international concern requiring an urgent, high-level and coordinated effort to control the outbreak (Cucinotta and Vanelli, 2020). As of April 9, 2020, over 1.5 million

COVID-19 cases have been reported across all continents, resulting in a pandemic, with northern Italy becoming Europe's epicenter, with over 140,000 reported cases (Gagliano et al., 2020).

While increasing global attention has been given to infected patients and the risk for infection of frontline healthcare professionals (Berger et al., 2020), a parallel concern has been expressed for the psychological impact that the COVID-19 pandemic may have in terms of anxious and depressive reactions among the general population (Lima et al., 2020). As evidence suggests a particularly unfavorable mental health outcome in COVID-19 frontline responders (Lai et al., 2020), we register the second case of suicide among female nurses leading the fight against COVID-19 in Northern Italy. Further, due to the emotional impact of COVID-19 pandemic, we may reasonably speculate a higher risk or relapse among people suffering from a pre-existing mental health condition (Yao et al., 2020). Patients with a psychiatric disorder are also vulnerable for a number of other reasons. First, having a psychiatric disorder has been associated with a higher likelihood of getting an infection (Seminog and

* Corresponding author. Section of Psychiatry, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Italy.

E-mail address: marco.colizzi@univr.it (M. Colizzi).

<https://doi.org/10.1016/j.bbih.2020.100073>

Received 9 April 2020; Accepted 17 April 2020

Available online 19 April 2020

2666-3546/© 2020 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Goldacre, 2013), possibly due to being cognitively impaired, underestimating the health risk, adopting less stringent self-protection, and having prolonged hospital admissions (Yao et al., 2020). Testing positive for COVID-19 would definitely amplify the fears associated with the infection. Second, access to medical care, which may *per se* be delayed because of the pandemic overloading the health care system, could be particularly difficult for people with mental health problems as a further consequence of discrimination (Li et al., 2018) or challenging clinical presentation (Sartorius, 2013). Third, the nationwide adoption of regulations progressively restricting people movement and introducing quarantine may result in psychiatric appointments being more difficult to attend, deemed unurgent, or rescheduled following a risk-benefit-based decision.

Epidemiological and clinical characteristics of COVID-19 are unclear and an established treatment protocol is missing (Huang et al., 2020). Among pediatric populations, the infection seems to result in less critical cases (5.9%) compared to infected adults (18.5%) (Dong et al., 2020). However, caution is called as the pandemic is ongoing and rapidly evolving, and the available evidence scarce. It is worth mentioning that adolescence is a critical period for the manifestation of mental health difficulties (Colizzi et al., 2020). Altogether, evidence suggests that COVID-19 presentation among adolescents with comorbid mental health problems may be challenging in terms of management and require complex care.

2. Case report

On March 13, 2020, a 16-year-old adolescent of White/Caucasian ethnicity, known since January 2020 for psychological treatment of an emerging eating disorder, entered the Accident & Emergency (A&E) Department of the Integrated University Hospital of Verona with referred (i) fever up to 38.7 °C lasting longer than 3 days, (ii) heart rate up to 130 beats per minute (bpm), (iii) likely development of delirium with progressively reduced lucid intervals, (iv) general malaise, (v) breathing difficulties, and (vi) altered olfactory and gustatory sensitivity. He was not taking any medication and there were no known allergies of any type. The first basic assessment in A&E found body temperature of 38 °C, borderline pulse oxygen unsaturation (SpO₂: 97%) in patient with normal haemoglobin (AA), blood pressure of 135/70 mmHg, and heart rate of 100 bpm. A brief history collection of events leading to A&E admission revealed contact with a person potentially infected by COVID-19. In particular, about 10 days prior to A&E admission, before the full restriction of people movement all over Italy, the patient and his family had dinner at home with a host who was having a severe cough and other flu symptoms not better specified. The patient's mother expressed concerns for the risk that such host had COVID-19, exposing the patient to the infection. COVID-19 triage was immediately started, remarkably 8 min after the patient's A&E registration.

2.1. COVID-19 triage

A nasopharyngeal swab was performed to test for the presence of SARS-CoV-2 genomic sequence through a multiplex-PCR-based method (Simplexa™). While waiting for results, a physician conducted a physical examination which did not observe any frank cardiovascular, pulmonary, abdominal, or neurological alteration. The patient appeared only partially cooperative and intermittently agitated. Loss of sphincter control was also observed, with both urinary and faecal incontinence. Blood and urine tests were performed, especially to investigate inflammatory markers. No specific alterations were observed, with C-reactive Protein and White Blood Count within normal range. Only an increase in total and direct bilirubin was noted, potentially suggesting the presence of Gilbert's syndrome (Supplementary Table 1). Through the day, a peripheral intravenous catheter (PIVC) was used to administer 0.9% saline (sodium chloride (NaCl)) solution for a total of 2000 ml as well as paracetamol for a total of 2000 mg (10 mg/ml, 100 ml bis in die (bid)).

Brain Computed Tomography (CT) scan, chest X-ray, and urinalysis were unremarkable. At some point, due to increasing preoccupation for his health status, the patient was so agitated that ran outside of the A&E. With support from healthcare staff, he came back to the COVID-19 Triage Unit and was relocated to a single-bed patient room. Despite reassurances, the patient appeared only slightly more relaxed and covered his face with bed sheets. He was observed lying in bed in fetal position.

About 4 h after the beginning of the COVID-19 triage, the nasopharyngeal swab result indicated the absence of SARS-CoV-2 RNA in the patient's sample. Further assessments of the temperature performed until the end of the day resulted in values ≤ 37 °C. During the night, the patient presented with marked agitation and aggressivity towards his mother and broke her glasses. According to the patient's mother, such behavior was very unusual for him. A neuropsychiatric evaluation was requested. A small temperature raise was also observed, with a borderline value of 37.5 °C.

2.2. Neuropsychiatric evaluation in the COVID-19 Triage Unit

The subsequent morning, a senior neuropsychiatrist reached the patient in the COVID-19 Triage Unit to assess him. The patient was casually dressed in a tracksuit and his personal hygiene was good. He was partially cooperative but sufficiently able to provide an adequate history with the support of his mother. His mood was slightly depressed. His affect tended to be dysphoric but remained congruous with the thought content. Severe anxiety evolving in mental confusion and loss of control was also observed, with the patient expressing an unmodulated and misdirected discharge of tension and emotions without concern about consequences. The patient showed a mildly disorganized process of thinking and the thought content revealed worries about his health status tending to a delusional intensity, in the absence of suicide ideas. No hallucinatory behavior was observed. He did not appear grossly impaired on a cognitive basis, with both recent and remote memory preserved. While orientation in space and person was intact, orientation in time was partially compromised, especially with reference to the last few days. The patient showed poor insight and judgment regarding his condition and need for help. The patient's clinical status was reported to have worsened in the few days before the A&E admission also in relation to the need to rearrange his psychology appointments for eating disorder as telephone/video-conference sessions in order not to expose him to unnecessary risk of SARS-CoV-2 contagion. The neuropsychiatrist advised for admission to the inpatient Child and Adolescent Neuropsychiatry Unit for further evaluation, after medical clearance. The antipsychotic Olanzapine was prescribed at the dosage of 2.5 mg bid as provisional treatment plan. On the evening of the same day, the patient was transferred. This was his first presentation to a psychiatric ward.

2.3. Inpatient stay at the Child and Adolescent Neuropsychiatry Unit

2.3.1. Medical history

A detailed medical history was obtained from the patient and his mother. He lived at home with his parents, his only sibling – a sister –, and the paternal grandmother. Family history of eating disorder and depression was reported, in particular for the patient's sister (receiving psychological treatment and psychopharmacological treatment with the Selective Serotonin Reuptake Inhibitor (SSRI) Paroxetine) and grandmother, uncle and second cousin on the maternal side. Also, the paternal step-uncle was reported suffering from depression and social phobia.

An extensive assessment of the patient's neurodevelopment history was unremarkable. The premorbid behavior was described as characterized by a certain degree of rigidity and occasional irritability when forced to change routine. The school performance was described as good and a few episodes of bullying were reported.

During primary school, two significant events were reported that affected the patient's eating habits. First, an episode of choking with a fishbone was described, leading the patient to avoiding eating fish for a

few years, in the absence of a previous selective diet. Second, an episode of anorexia happened during a school class leading the patient to avoiding having breakfast in an attempt to prevent the recurrence of the incident.

In 2015, due to financial problems, the patient’s mother alone moved from the south to the north of Italy (Tuscany and then Veneto region) to take a new job. The separation was reported not to be particularly stressful. In the autumn of 2018, the patient reached his mother in Northern Italy with the rest of the family. During the incoming second year of high school, the patient had a moment of significant pubertal growth spurt and presented with increasing anxiety, distress, and unhealthy eating behavior. In February 2019, he developed a paraparesis of unknown origin lasting for 3 months and requiring psychomotor rehabilitation. An extensive clinical and instrumental diagnostic process concluded for a functional neurological disorder. Due to his reduced performance, the patient failed the school year and decided to repeat it in a different school.

The patient’s eating disorder frank onset was reported in June 2019, with progressive restricting behaviors justified by gastrointestinal discomfort, in the absence of compensatory behaviors such as vomiting or excessive sporting activities. Starting from a weight of 46 kg, he reached 38 kg and then recovered to the current weight of 42.5 kg (Body Mass Index of 15 kg/m² at 3rd percentile for age). According to the mother, the two aforementioned episodes during primary school may have predisposed the patient to the development of an eating disorder. At the time of the hospital admission, he seemed to have increased pre-occupations for the effect of food on his health.

2.3.2. Clinical course, diagnostic conclusions, and outpatient follow-up

Two more clinicians reassessed the patient daily and discussed the case with the senior neuropsychiatrist. Since the first day of admission, the patient reported preoccupations for the somatic symptoms he had experienced until then. Such thoughts no longer reached a delusional intensity. However, despite reassurances that the nasopharyngeal swab was negative for SARS-CoV-2, they were still interfering with his feelings and behavior. While taking into account that the patient could have contracted another infection, less serious than COVID-19 and self-resolving, his thoughts about the seriousness of his symptoms still appeared excessive and disproportionate. After observing clinically relevant anxiety reactions and mood fluctuations towards a depressive state, Paroxetine, which had been successful for the patient’s sister, was initiated at the dosage of 20 mg. Over the following week there was a

progressive improvement of his clinical state with a significant attenuation of the patient’s health concerns and impact on wellbeing.

From the Structured Clinical Interview for DSM-5 (SCID-5) (First et al., 2015), it also clearly emerged that he had experienced similar health concerns in February 2019 regarding the neurological symptoms that had led to the paraparesis, leading to the hypothesis that he had suffered from an acute episode of Conversion Disorder with weakness/paralysis. A further exploration of his eating disorder revealed alleged gastrointestinal symptoms and fear for some foods considered unhealthy (e.g. dressings), risky or unpleasant (e.g. meat), forcing him to change his dietary habits. As such failure to gain weight was not related to a distorted body image, an Avoidant/Restrictive Food Intake Disorder was also hypothesized.

Additional blood tests were not particularly informative apart from detecting hyperprolactinemia and a reduction of Follicle-stimulating Hormone and Luteinizing Hormone values (Supplementary Table 1), possibly as a consequence of a protracted restrictive eating behavior (Baranowska and Kochanowski, 2018), and vitamin D deficiency. Neurocognitive and psychometric assessments were performed using the Wechsler intelligence scale for children-fourth edition (WISC-IV) (Wechsler, 2003) and Self-Administered Psychiatric Scales for Children and Adolescents (SAFA) (Cianchetti and Sannio Fancello, 2001). While the patient’s full-scale IQ was in the average range as for normative data (FSIQ = 105), a highly heterogeneous profile emerged, with ‘Perceptual Reasoning’ and ‘Working Memory’ falling in the high average range, ‘Verbal Comprehension’ in the average range though consisting of discrepant subtest scores, and ‘Processing Speed’ in the extremely low range. Such WISC-IV profile may be difficult to interpret and worth reassessing in the long-term once the patient is clinically stable. Also, SAFA subscales suggesting pathological symptoms (scores > 69) were ‘Anxiety’, ‘Somatic Symptoms and Hypochondria’, and ‘Obsessive and Compulsive Symptoms’, with borderline ‘Depression’, and ‘Psychogenic Eating Disorder’ falling short of pathological cut-off (Supplementary Table 1).

The patient received a diagnosis of Severe and Persistent Somatic Symptom Disorder (SSD), according to DSM-5 (First et al., 2015), and was discharged on March 20, 2020, with the indication to continue the treatment with Olanzapine and Paroxetine. Two post-discharge assessments performed 1 and 3 weeks later as well as an intermediate telephone follow-up found the patient clinically stable and subjectively well. Only minimal somatic symptoms were reported. At the time of writing, in accordance with the patient and his family, the healthcare pathway

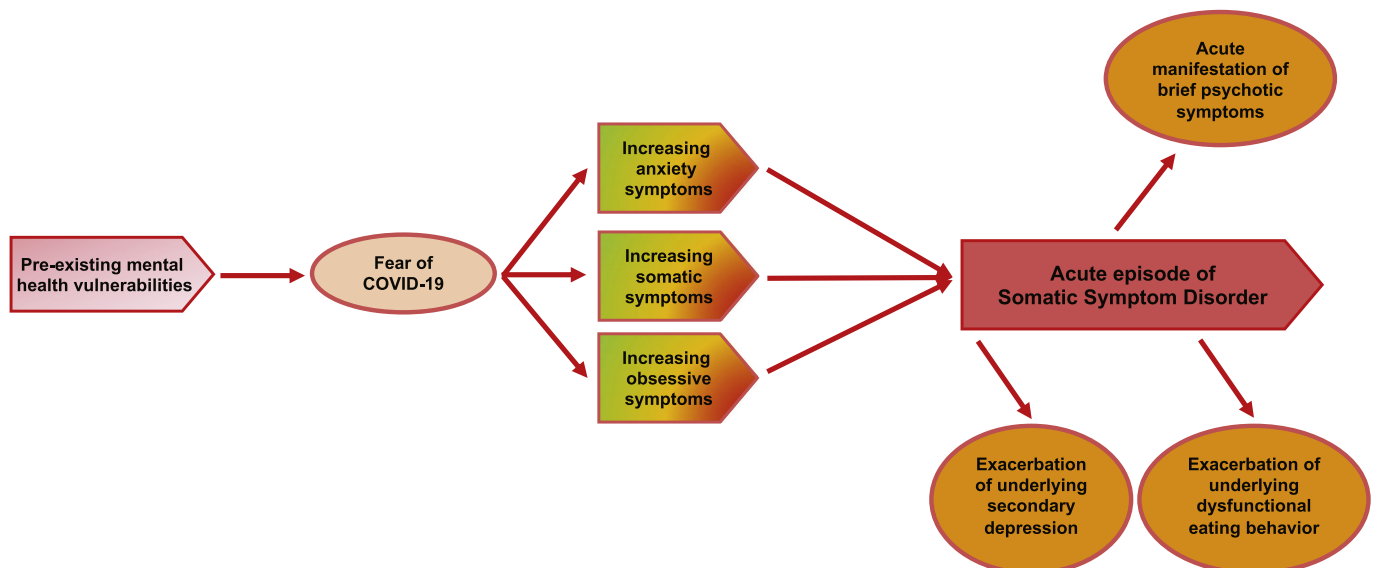


Fig. 1. Developmental cascade towards the manifestation of an acute episode of Somatic Symptom Disorder in a patient worried about having COVID-19.

includes dietary counseling, psychological support, and Olanzapine decalage in a view of discontinuing the antipsychotic in the mid-long term.

3. Discussion

Outbreaks of emerging infections such as COVID-19 can elicit strong fear reactions in the general population. In particular, the rapid evolution into a pandemic (Cucinotta and Vanelli, 2020), the obligation to quarantine (Wilder-Smith and Freedman, 2020) and the evidence of a possible fatal outcome (Onder et al., 2020) as well as the repeated exposure to media reports of unprecedented circumstances requiring new medical strategies (Garfin et al., 2020) may lead to unintended societal overconcerns. Evidence suggests that such preoccupations may degenerate in heightened anxiety and stress responses with downstream effects on health, on turn resulting in misplaced health-protective and help-seeking behaviors (Garfin et al., 2020).

Here, we report a case of symptom exacerbation of a Severe and Persistent Somatic Symptom Disorder (SSD), triggered by the fear of having COVID-19 (Fig. 1). Considering the patient's background and after excluding COVID-19, there were two initial diagnostic possibilities that is the presence of dysfunctional preoccupation with physical symptoms, with or without an underlying infection. According to DSM-5, a known medical condition explaining the somatic symptoms does not preclude the diagnosis of SSD if, as in our case, the patient's distress is in excess of what would be expected (First et al., 2015). However, we were not able to identify any underlying medical condition.

Given the presence of somatic symptoms, patients with SSD are subject to medical evaluations other than psychiatric, in an attempt to medically explain the unexplainable. Even though evidence suggests that SSD is quite common, such condition remains underrecognized, even in psychiatric settings, leading to considerable strain on healthcare resources through increased primary, specialist, and emergency visits as well as diagnostic investigations and hospital admissions (Rosic et al., 2016). Increased healthcare utilization is a significant concern in SSD (Barsky et al., 2005), also in light of evidence of limited response to psychopharmacological treatment and use of psychological interventions (Rosic et al., 2016). Nowadays, this is particularly relevant as such conditions can overload the already affected health care systems. Due to an unexpected relevant world life event and depending on perception of its impact (Bedard-Thomas et al., 2018), even people not getting the COVID-19 infection, though not life-threatening, may be severely affected by it. When COVID-19-like symptoms occur, clinicians may have to differentially diagnose a possible exacerbation of a pre-existing SSD, triggered by fear of being infected. This is of particular importance as it may help preventing further burden to the healthcare system.

Ethical standards

The patient and his parents have agreed to this publication by written consent.

Declaration of competing interest

None.

Acknowledgments

We acknowledge infrastructure from the Integrated University Hospital of Verona and the University of Verona.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.bbih.2020.100073>.

References

- Baranowska, B., Kochanowski, J., 2018. Neuroendocrine aspects of anorexia nervosa and bulimia nervosa. *Neuroendocrinol. Lett.* 39, 172–178.
- Barsky, A.J., Orav, E.J., Bates, D.W., 2005. Somatization increases medical utilization and costs independent of psychiatric and medical comorbidity. *Arch. Gen. Psychiatr.* 62, 903–910.
- Bedard-Thomas, K.K., Bujoreanu, S., Choi, C.H., Ibeziako, P.I., 2018. Perception and impact of life events in medically hospitalized patients with somatic symptom and related disorders. *Hosp. Pediatr.* 8, 699–705.
- Berger, Z.D., Evans, N.G., Phelan, A.L., Silverman, R.D., 2020. Covid-19: control measures must be equitable and inclusive. *BMJ* 368, m1141.
- Cianchetti, C., Sannio Fancello, G., 2001. Scale Psichiatriche di Autosomministrazione per Fanciulli e Adolescenti (SAFA). Organizzazioni Speciali, Firenze.
- Colizzi, M., Lasalvia, A., Ruggeri, M., 2020. Prevention and early intervention in youth mental health: is it time for a multidisciplinary and trans-diagnostic model for care? *Int. J. Ment. Health Syst.* 14.
- Cucinotta, D., Vanelli, M., 2020. WHO declares COVID-19 a pandemic. *Acta Biomed.* 91, 157–160.
- Dong, Y., Mo, X., Hu, Y., Qi, X., Jiang, F., Jiang, Z., Tong, S., 2020. Epidemiological characteristics of 2143 pediatric patients with 2019 coronavirus disease in China. *Pediatrics*. <https://doi.org/10.1542/peds.2020-0702>.
- First, M.B., Williams, J.B.W., Karg, R.S., Spitzer, R.L., 2015. Structured Clinical Interview for DSM-5 Disorders, Clinician Version (SCID-5-CV). American Psychiatric Association, Arlington, VA.
- Gagliano, A., Villani, P.G., Cò, F.M., Paglia, S., Bisagni, P.A.G., Perotti, G.M., Storti, E., Lombardo, M., 2020. 2019-ncov's epidemic in middle province of northern Italy: impact, logistic & strategy in the first line hospital. *Disaster Med. Public Health Prep.* 1–15.
- Garfin, D.R., Silver, R.C., Holman, E.A., 2020. The novel coronavirus (COVID-2019) outbreak: amplification of public health consequences by media exposure. *Health Psychol.* 39 (5), 355–357. <https://doi.org/10.1037/hea0000875>.
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., Xiao, Y., Gao, H., Guo, L., Xie, J., Wang, G., Jiang, R., Gao, Z., Jin, Q., Wang, J., Cao, B., 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 395, 497–506.
- Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M., Wang, H., Wang, G., Liu, Z., Hu, S., 2020. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 3, e203976.
- Li, J., Zhang, M.M., Zhao, L., Li, W.Q., Mu, J.L., Zhang, Z.H., 2018. Evaluation of attitudes and knowledge toward mental disorders in a sample of the Chinese population using a web-based approach. *BMC Psychiatr.* 18, 367.
- Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., Ren, R., Leung, K.S.M., Lau, E.H.Y., Wong, J.Y., Xing, X., Xiang, N., Wu, Y., Li, C., Chen, Q., Li, D., Liu, T., Zhao, J., Liu, M., Tu, W., Chen, C., Jin, L., Yang, R., Wang, Q., Zhou, S., Wang, R., Liu, H., Luo, Y., Liu, Y., Shao, G., Li, H., Tao, Z., Yang, Y., Deng, Z., Liu, B., Ma, Z., Zhang, Y., Shi, G., Lam, T.T.Y., Wu, J.T., Gao, G.F., Cowling, B.J., Yang, B., Leung, G.M., Feng, Z., 2020. Early transmission dynamics in wuhan, China, of novel coronavirus-infected pneumonia. *N. Engl. J. Med.* 382, 1199–1207.
- Lima, C.K.T., Carvalho, P.M.M., Lima, I.A.A.S., Nunes, J.V.A.O., Saraiva, J.S., de Souza, R.I., da Silva, C.G.L., Neto, M.L.R., 2020. The emotional impact of Coronavirus 2019-nCoV (new Coronavirus disease). *Psychiatr. Res.* 287, 112915.
- Lu, R., Zhao, X., Li, J., Niu, P., Yang, B., Wu, H., Wang, W., Song, H., Huang, B., Zhu, N., Bi, Y., Ma, X., Zhan, F., Wang, L., Hu, T., Zhou, H., Hu, Z., Zhou, W., Zhao, L., Chen, J., Meng, Y., Wang, J., Lin, Y., Yuan, J., Xie, Z., Ma, J., Liu, W.J., Wang, D., Xu, W., Holmes, E.C., Gao, G.F., Wu, G., Chen, W., Shi, W., Tan, W., 2020. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *Lancet* 395, 565–574.
- Onder, G., Rezza, G., Brusaferro, S., 2020. Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. *J. Am. Med. Assoc.* <https://doi.org/10.1001/jama.2020.4683>.
- Rosic, T., Kalra, S., Samaan, Z., 2016. Somatic symptom disorder, a new DSM-5 diagnosis of an old clinical challenge. *BMJ Case Rep.* <https://doi.org/10.1136/bcr-2015-212553>.
- Rothe, C., Schunk, M., Sothmann, P., Bretzel, G., Froeschl, G., Wallrauch, C., Zimmer, T., Thiel, V., Janke, C., Guggemos, W., Seilmaier, M., Drosten, C., Vollmar, P., Zwirgmaier, K., Zange, S., Wölfel, R., Hoelscher, M., 2020. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *N. Engl. J. Med.* 382, 970–971.
- Sartorius, N., 2013. Comorbidity of mental and physical diseases: a main challenge for medicine of the 21st century. *Shanghai Arch Psychiatry* 25, 68–69.
- Seminog, O.O., Goldacre, M.J., 2013. Risk of pneumonia and pneumococcal disease in people with severe mental illness: English record linkage studies. *Thorax* 68, 171–176.
- Wechsler, D., 2003. The Wechsler Intelligence Scale for Children—Fourth Edition. Pearson, London.
- Wilder-Smith, A., Freedman, D.O., 2020. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J. Trav. Med.* 27.
- Yao, H., Chen, J.H., Xu, Y.F., 2020. Patients with mental health disorders in the COVID-19 epidemic. *Lancet Psychiatry* 7, e21.