Concern for covid-19 cough, fever and impact on mental health.
What about risk of Somatic Symptom Disorder?

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Abstract

Corona virus disease (Covid-19) has become a global pandemic in 2020. Symptoms include fever, a new and persistent cough, fatigue, dyspnoea and loss of sense of taste and/or smell. Concern is also evident for the psychological impact of covid-19. A systematic review found depression, anxiety, fatigue and post-traumatic stress disorder were common in the months after previous coronavirus pandemics of middle east respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS). These conditions may also develop following covid-19 infection. People may also be at risk of Somatic Symptom Disorder (SSD). However, there is little mention of concern for SSD in current literature with the exception of some studies that investigate covid-19 related anxiety and its association with persistent somatic symptoms. Previous research has shown symptoms such as fatigue and gastrointestinal symptoms persist following infection with a range of viruses including coronaviruses of MERS and SARS. Infection with covid-19, as well as pandemic-related distress may also pose risks for SSD. The term "Long Covid" and multidisciplinary care pathways for covid-19 related persistent symptoms are discussed. Directions for future research into the relationship between covid-19 and SSD are suggested.
**Editorial**

Corona virus disease (Covid-19) is a global pandemic. The novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that causes Covid-19 is reported to have originated in a seafood market in the Chinese city of Wuhan. It is hypothesised the virus was transmitted from live animals to humans at the market. The virus subsequently spread worldwide via human to human transmission (Lu et al., 2020). Covid-19 symptoms include fever (85.6%), a new and persistent cough (65.7%), fatigue (42.4%), dyspnoea (21.4%) and loss of sense of taste and/or smell (Hu et al., 2020). Neurological and gastrointestinal symptoms have also been reported. These include diarrhoea, vomiting, nausea, abdominal pain (Smyk et al., 2020) dizziness, as well as headache which may be part of a systemic illness rather than a specific neurological syndrome (Rogers et al., 2020).

Beyond the most commonly reported covid-19 symptoms, calls to action have been made to address the psychological impact of the disease (Byrne & Wykes, 2020; Kumar & Rajasekharan Nayar, 2020; Moreno et al., 2020). These include direct effects of covid-19 infection on the central nervous system such as encephalitis, Intensive Care Unit (ICU) related trauma, exacerbation of existing psychiatric disorder (Rogers et al., 2020) and the wider pandemic impact of isolation and distress incurred with social distancing, lock downs and quarantine (Jia et al., 2020; Lima et al., 2020). A systematic review assessed the psychiatric and neuropsychiatric presentations of severe acute respiratory syndrome (SARS), middle east respiratory syndrome (MERS) and Covid-19 and identified delirium as a common acute symptom (Rogers et al., 2020). Depression, anxiety, fatigue and post-traumatic stress disorder (PTSD) were common in the months after MERS and SARS. Rogers et al., (2020) suggest
patients with Covid-19 may also experience these conditions and symptoms, as well as insomnia following acute stages of infection.

People may also be at risk of persistent physical symptoms (PPS). Generally, these are defined as persistent bodily symptoms with functional disability but no explanatory structural or other pathology (Fink & Schroder, 2010). Somatic Symptom Disorder (SSD) is the corresponding diagnosis in the Diagnostic and Statistics Manual-V (DSM-V). It refers to persistent (6 months or more) and clinically significant somatic complaints accompanied by excessive and disproportionate health-related thoughts, feelings and behaviours regarding the symptoms (American Psychiatric Association, 2013). Whereas, Bodily Distress Disorder (BDD) is the diagnostic term used in the eleventh version of the International Classification of Diseases (ICD-11). It requires both the presence of one or more distressing bodily symptoms, that can either be “medically unexplained” or caused by a general medical condition, and also “excessive, disproportionate or maladaptive” responses to the symptoms. Most importantly, both diagnostic terms include people with symptoms of distress related to medical conditions. For example, cancer, diabetes and heart disease. SSD describes a positive conceptualisation of symptoms based on presence of symptoms rather than absence of them. In addition, it moves beyond mind/body dualism, such that inexplicability does not equal psychiatric disorder, enabling a better therapeutic alliance where symptoms are not considered to be “all in the mind” (Chalder & Willis, 2018). For these reasons we prefer the diagnostic term SSD and will use it in the remainder of this article.

Despite there being a large body of literature investigating the psychological impact of covid-19, there is little mention of covid-19 related SSD, with the exception of some studies that investigate covid-19 related anxiety and its association with somatisation (Colizi et al., 2020; Shevlin et al., 2020; Yifan et al., 2020). This may be due to ongoing, dualistic
conceptualisations of health as either physical or psychological, despite efforts to provide more integrated care (Chalder, 2005; Deary, 2005). It could also be too early for reports given SSD diagnostic criteria that symptoms should persist for 6 months or more. Unfortunately, the pandemic effects of covid-19 infection anxiety, social isolation, adverse media exposure, worry about significant others, limited access to health services are not only associated with a rise in mental health problems (Jia et al., 2020; Luo et al., 2020; Yao et al., 2020) they also create a “perfect storm” for the development of persistent symptoms.

In the United Kingdom (UK) general population, covid-19 related anxiety has been found to predict general somatic symptoms, particularly fatigue, followed by gastrointestinal (GI) symptoms (Shevlin et al., 2020). In China, three somatic symptom clusters were identified in 140 ICU nurses: (a) dyspnoea (30.7%), dizziness (17.9%), sleepiness (9.3%); (b) headache (19.3%), nausea (21.4%); (c) chest discomfort / palpitation (31.4%), xerostomia (15.7%) and fatigue (15%) (Yifan et al., 2020). They were significantly associated with accidents and personal protective equipment (PPE) failure, giving rise to fears of covid-19 infection. In Italy, an adolescent boy presented with somatic symptoms suggestive of covid-19 (fever, increased heart rate to 130 bpm, delirium, breathing difficulty, altered taste and smell and general malaise) despite testing negative (Colizi et al., 2020). Lowered mood and severe anxiety about his somatic symptoms with delusional intensity were also evident. A diagnosis of SSD was appropriate given history of functional neurological disorder (FND) and eating disorder onset in February 2019 in response to GI discomfort. However, there is no comment on the reliability of the covid-19 test i.e. if the test was repeated and found negative. There is also a lack of report on any covid-19 testing in the other studies. As such, we cannot be certain that participants were not experiencing symptoms of actual covid-19 infection as opposed to the somatising effects of covid-19 related anxiety.
Previous research suggests that people may in fact be at risk of SSD following actual infection with covid-19. Symptoms such as fatigue, have been shown to persist following the acute stages of a number of different viruses. Glandular fever, meningitis and hepatitis are significant risk factors for post-infectious chronic fatigue (Berelowitz et al., 1995; Candy et al., 2003; Cope et al., 1994; Hotopf et al., 1996; White et al., 2001). The previous coronavirus pandemic viruses, (MERS) and (SARS) are also associated with fatigue. 40.3% of SARS survivors reported a chronic fatigue problem, with 27.1% meeting the Centre for Disease Control (CDC) criteria for chronic fatigue syndrome (CFS) (Lam et al., 2009). Fatigue was also reported as a long-term chronic outcome up to 40 months post-infection, in at least one-third of MERS patients (Ahmed et al., 2020).

Given the development of fatigue following infection with a range of viruses, including the previous coronavirus pandemics, it is reasonable to assume that covid-19 infection will pose a similar threat. At the time of writing, fatigue and other symptoms are in fact being reported as ongoing, months after covid-19 infection (Carfi et al., 2020; Nabavi, 2020).

Previous research on post-infectious fatigue development shows it follows a temporal course that consists of defined phases. It is a common symptom in the acute stages of viral infections. It may then persist in a subacute phase of $\leq 3$ months duration. A chronic phase refers to fatigue that persists beyond 6 months, long after the initial viral infection (CDC, 2015).

Risk factors that are associated with these phases can be categorised into biological, behavioural, cognitive, emotional and social domains. Elevated inflammatory markers such as CD4 and CD8 are associated with sub-acute fatigue (Candy et al., 2003; White et al., 2001). Fatigue at infection onset, prolonged bed rest, GP sick certification and psychological distress
are significant risk factors for chronic fatigue subsequently (Berelowitz et al., 1995; Candy et al., 2003; Cope et al., 1994; Hotopf et al., 1996; White et al., 2001). In contrast, physical fitness at infection onset is found to be protective (Candy et al., 2003; White et al., 2001). Cognitive and behavioural responses to symptoms can be associated with both sub-acute and chronic fatigue. These include reduced activity, all or nothing behaviour, negative perfectionism and beliefs of a prolonged, serious illness prognosis (Candy et al., 2003; Cope et al., 1994; Moss-Morris et al., 2011; White et al., 2001).

Other models of persistent fatigue development have also identified risk factors that can be differentiated in accordance with a temporal course across a number of chronic diseases. These include human immuno deficiency virus (HIV), breast cancer, arthritis and multiple sclerosis. Similarly, they all recognise biological processes that initially trigger fatigue but that additional psychological, social and behavioural factors maintain fatigue once triggered. Hughes et al., (2020), provide a good example of a biopsychosocial model for HIV-related fatigue. Given the overlap of risk factors in both post-infectious and condition-specific fatigue models, it is reasonable to assume they also apply to the possible development of fatigue following covid-19 infection.

Other somatic symptoms that are known to persist following infections such as norovirus and campylobacter include the GI symptoms of irritable bowel syndrome (IBS) (Spiller & Garsed, 2009). The developmental course of post-infectious IBS is also understood to be initially triggered by infection but maintained by social, psychological and behavioural factors. These include prolonged duration of initial infection, toxicity of infection, mucosal inflammation, high levels of perceived stress, negative illness beliefs, all or nothing behaviour, anxiety and depression (Moss-Morris et al., 2011; Spiller & Garsed, 2009). GI symptoms are not as widely
reported as other acute covid-19 symptoms such as fever and cough. However, where they are identified there is risk of prolonged infection duration, as they may present before respiratory distress and can mimic other GI disorders such as inflammatory bowel disease (IBD) (Smyk et al., 2020).

PTSD is also a known risk factor for the development of persistent somatic symptoms (Afari et al., 2014). However, there is no mention of somatic symptoms in relation to covid-19 related PTSD. Boyraz & Legros (2020), warn PTSD could develop following exposure to stressful lockdown/quarantine conditions, bereavement, anxiety about, as well as infection with covid-19 and ICU related trauma in both patients and health professionals. Given that people are 2.7 times more likely to develop persistent somatic symptoms following exposure to trauma, we may also expect a synonymous increase in SSD (Afari et al., 2014).

We are now learning more about covid-19 and its long-term impact. The term “long covid” has been coined to describe symptoms such as breathlessness, fatigue and joint pain that last for months after the initial infection has subsided (Nabavi, 2020). People who have “long covid” are also known as “long-haulers” and report their daily functioning is impaired, with some unable to return to work and resume their previously active lifestyles. It is important to identify and classify these symptoms to facilitate management and treatment. However, the terms “long covid” and “long hauler” may be doing more damage than good. Both imply a serious, chronic disease timeline and identity. Perceptions of serious illness consequences and prolonged recovery beliefs are risk factors for sub-acute and chronic fatigue (Candy et al., 2003; Moss-Morris et al, 2011). A new term or appropriate working diagnosis that is recognised by healthcare services, employers and government agencies could counter the
development of a “chronic illness” identity which may not be accurate or helpful. It could also facilitate appropriate rehabilitative care and support (NIHR, 2020).

The acute phases of covid-19 infection have involved stays in ICU with bed rest and for some this has been prolonged. Previously, patients with acute lung injury have developed muscle weakness during ICU treatment which was associated with substantial impairments in physical function beyond 24 months (Fan et al., 2014). Covid-19 patients may also be at risk from such long-term complications. Acute and post multi-disciplinary rehabilitation in hospitals and respiratory units may be effective for prevention of post-infectious fatigue and other symptoms (Ahmed et al., 2020). Educational interventions to limit bed rest and gradually increase activity have demonstrated effectiveness in reducing post-infectious fatigue (Candy et al., 2004). Similar interventions may therefore help medium to long term recovery of fatigue if it persists beyond the acute stages of covid-19 infection. Evidence-based treatments for fatigue and other persistent somatic symptoms are also well established and moderately effective. Cognitive behavioural therapy (CBT) demonstrates some of the strongest evidence for SSD (Van Dessell et al., 2014). CBT is recommended as part of multidisciplinary treatment for high risk patients with SSD, whereas, low to moderate risk cases can be managed in primary care with a stepped-care disease management approach to persistent somatic symptoms (van der Feltz-Cornelis et al., 2012). The SSD scale (SSD-12) demonstrates good psychometric properties and may assist clinicians with diagnosis and assessment (Toussaint et al., 2017). In the UK, persistent somatic symptoms are now managed in a stepped-care approach that includes the primary care based Improving Access to Psychological Therapies (IAPT) programme (McCrae et al., 2015), with step up referrals to secondary and tertiary care multi-disciplinary services (Chalder & Willis, 2017).
At the primary care level, General Practitioners (GP’s) will be the first port of call for most people experiencing persistent covid-19 symptoms, whether post-infectious or in relation to pandemic distress. GP’s could provide simple advice and self-help materials that target balancing activity and rest, sleep hygiene and anxiety management. At the secondary care level, calls are also now being made to establish a network of covid-19 rehabilitation clinics (NHS England and NHS Improvement London, 2020). Multi-disciplinary care pathways for people who have been infected with covid-19 are advised. However, a greater number of people may be at risk of persistent symptoms due to pandemic-related distress. We recommend additional guidance and care pathways (see figure 1).
Figure 1. Covid-19 related persistent physical symptoms care pathways (adapted from NHS England and NHS Improvement London, 2020).
The relationship between risk of SSD and covid-19 remains speculative. However, a good case definition or working diagnosis is needed, with multidisciplinary contribution including patient and public involvement (NIHR, 2020). Biopsychosocial models for persistent physical symptoms that move beyond dualistic concepts of illness, such as those described for fatigue could provide a plausible explanation for “long covid” and guide interventions (Chalder & Willis, 2018). For example, focussing attention with increased monitoring of symptoms and health anxiety can exacerbate and perpetuate symptoms such as fatigue and pain that are characteristic of “long covid”. Biopsychosocial models can also account for the “long covid” experience of symptoms arising in one physiological system, which then abate only to rise in a different system (NIHR, 2020). Essentially, they provide a parsimonious route to the recognition that persistent multi-system symptoms can be produced by the interaction of physiological, cognitive, behavioural, emotional and social factors.

Future research might consider adequately powered, prospective designs to track a possible temporal course of somatic symptoms. Samples of covid-19 infected, covid-19 anxious and healthy subjects could be compared. Outcome evaluation will depend on the inclusion of reliable covid-19 testing at baseline and suitable follow up time points. Validated, generic measures such as the PHQ15 (Kroenke et al., 2002) can capture a range of somatic symptoms and measures of fatigue (Cella & Chalder, 2010) could track fluctuations in specific symptoms. In addition, measurement of relevant biological inflammatory markers such as CD4, CD8, IL-6 as well as psychosocial factors would provide understanding of contributing processes across time. Randomised controlled trials are needed to evaluate specific interventions designed to target covid-19 related SSD. Mediators of change and moderator analyses would further our understanding of how treatment works and for whom (Hofmann & Hayes, 2019; Windgassen et al., 2016).
References


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Kroenke, K, Spitzer, R. & Williams, J. (2002). The PHQ-15: Validity of a New Measure for Evaluating the Severity of Somatic Symptoms, *Psychosomatic Medicine, 64*(2), 258-266


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https://evidence.nihr.ac.uk/themedreview/living-with-covid19/


Journal of Psychosomatic Research, 97, 9-17, 10.1016/j.jpsychores.2017.03.017

van der Feltz-Cornelis C., Hoedeman, R., Keuter, E. & Swinkels, J. (2012). Presentation of the Multidisciplinary Guideline Medically Unexplained Physical Symptoms (MUPS) and

doi:10.1016/j.jpsychores.2011.11.007


https://doi.org/10.1016/j.jpainsymman.2020.03.039