

## Research Article

# Frontline Healthcare Professional's Acute Stress Disorder during Covid-19

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**Background:** Frontline healthcare workers are on high risk since the Covid-19 virus outbreak. A frontline healthcare professional (HP) combatted patients' deaths and disasters from the virus. Own injury, potential complications, and isolation were anticipated.

**Methods:** This is a case report of a HP who withdrew to self-isolation for 2-weeks with an intensifying fear of health deterioration. The isolation and feelings of being in poor health, opened for an asynchronous email therapy with CBT in Socratic-maieutic style with about 60 open-ended questions and triangulated with a projective test. The acute stress disorder (ASD) was validated by National Stressful Events Survey Acute Stress Disorder Short Scale (NSESSS).

**Results:** The NSESSS confirmed the severity of ASD. Seven symptoms were repeatedly assessed death anxiety, worries about family after own death, chest compression, stress, depression, and other psychological and physical symptoms. The four assessments were done at the COVID-19 diagnosis, at start and end of the asynchronous email therapy along with two follow-ups at 10 weeks and 9 months, respectively. Friedman test with Page L trend test revealed a steady symptom-improvement trend over all measurements ( $p < 0.001$ ; Page L,  $p < 0.001$ ).

**Conclusion:** The psychological symptoms increased during isolation and quarantine periods and escalated the physical awkwardness in the healthcare professional. Consequently, both types of discomfort need to be appropriately addressed.

**Keywords:** Acute stress disorder; COVID-19; Pandemic; Healthcare professional; Therapy; Asynchronous email therapy

## Background

According to Office for National Statistics (ONS, 2020) it was estimated that 0.27% of private households in UK were affected by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which is referred to as COVID-19 in this report [1]. Altogether, a mean of 148,000 people in UK had COVID-19 between 27 April and 10 May 2020. Healthcare professionals (HP) tested positive for COVID-19 at average 1.33% compared to another person's norm of 0.22% who tested positive for COVID-19.

Magnavita et al. (2020) provided insights into COVID-19 symptoms in a large cohort of HPs during the acute phase of the COVID-19 pandemic [2]. Both the physical and mental health conditions of an otherwise healthy population were studied. It was found that the health of the HPs deteriorated dramatically, only a small number had no physical or psychological symptoms. Many HPs contracted SARS-CoV-2 infection while working in a hospital and most of the infected workers were females. Troyer et al. (2020) studied survivors from SARS-CoV-19 and found that they were clinically diagnosed with PTSD, depression, pain disorder, panic disorder, and obsessive-compulsive disorder even months post-infection, indicating a dramatic increase from their pre-infection prevalence

of any psychiatric diagnoses [3]. At present, Lai et al.'s (2020) found that Chinese HPs exposed to COVID-19, reported experiencing symptoms of depression, anxiety, insomnia, and distress, with special reference to front-line HP directly engaged in diagnosing, treating, or providing care to patients with suspected or confirmed COVID-19 [4].

The strong stressors in forms of daily escalating pandemic of COVID-19 and the explicit measures from the government to deal with the crisis, along with daily update about the surveillance of active cases and contagion-related deaths on websites, and social media, as well as the lockdowns, over-activate people's nervous system [5]. The daily reminders of COVID-19-related real-life danger and deaths is acknowledged to induce much death anxiety in the populations [6]. The psychological distress and the signals of the severity of the outbreak add to the feelings of danger. Simultaneously, the psychological crisis interventions might have lost the critical time point to intervene [5] or are inappropriate for a pandemic requiring distance between people [7].

Research with focus on PTSD, has frequently been reported but there are less reports on COVID-19-induced acute stress disorders (ASD) [3,8]. Therefore, we aimed to focus on ASD and followed its

progression and result through an unconventional early intervention in a healthcare professional (HP), who combatted patients' deaths and tough conditions from the invisible "enemy" COVID-19.

## Methods

### Crisis intervention

This is a case report about a HP who attracted ASD due to COVID-19. During the pandemic, an HP suffered acutely from the symptoms in forms of death anxiety, worries about family after own death, chest compression, stress, depression, and other psychological and physical symptoms. The crisis-intervention comprised dense asynchronous email therapy. This remote form of email- therapy works in adjourned time. Both the client and therapist decide when they want to send an email, which gives time for reflection. The email therapy comprised Socratic/maieutic questioning, in established CBT-style leading to an effective collaboration between parts [9]. Written informed consent was received and about 60 questions were reflected on and responded to by the HP (Table 1). The working hypothesis was "acute stress disorder" (ASD), which is known to be an intense and dysfunctional reaction beginning shortly after an overwhelming traumatic event and lasting less than a month. The diagnosis was validated by means of the National Stressful Events Survey Acute Stress Disorder Short Scale (NSESSS; Kilpatrick et al., 2013) and triangulated by a "CURVE" test in projective style constructed for the very moment to visualize the progression of the quantity of symptoms during collaboration To ensure that ASD did not progress into a chronic condition, the HP was followed up for 9 months (Table 1) [10].

The HP wrote in the introduction of the email therapy "At the beginning of COVID pandemic, a lot of hospitals in Europe and UK, reemployed their staff to work at intensive care units. I was one of those who stayed in my department, after the reemployment of half of my team. I had very long working hours".

Physical symptoms like "shortness of breath and possible decrease in oxygen saturation, afraid of being complicated necessitating intubation" triggered unpredicted "stress from dealing with a virus of unknown nature. The precautions were not clear, and it took us few weeks until the government set up guidelines. We used only to know that people are dying every day in other countries and the number of cases were significantly increasing in the UK."

Worrisome feelings emerged: "I started [with] the feeling of depression since the beginning of the COVID pandemic, seeing many patients died and most of my colleagues down one by one like flies, I was sure that my turn will come sooner or later."

Further uncomfortable feelings surfaced: "I felt guilty that I can't see my beloved ones when I do not know the future and if my condition might worsen anytime". Also feelings of being of no use prevailed: "... of not being able to fight,... as a handicapped soldier.... when [co-workers] were asking for help because of some sort of shortage.

The physical symptoms worsened the psychological symptoms and vice versa (Figure 1). The HP wrote: "I think because the virus is still relatively new, no one knows what long-term effect it carries on the body organs. I was thinking about all possibilities but was in doubt if those who had it, will suffer from any long-term effects."

Reflections became apparent: "remembered that I might die anytime, thought about my beloved ones.... their sadness and hard times." When the HP was asked how he would advise other colleagues when they felt depressed and were fearful about their future, he answered: "they should think that they are fighting for everyone, for their family and beloved ones".

## Results

The hypothesis was termed "acute stress reactions". The appropriateness of the hypothesis was validated by means of the

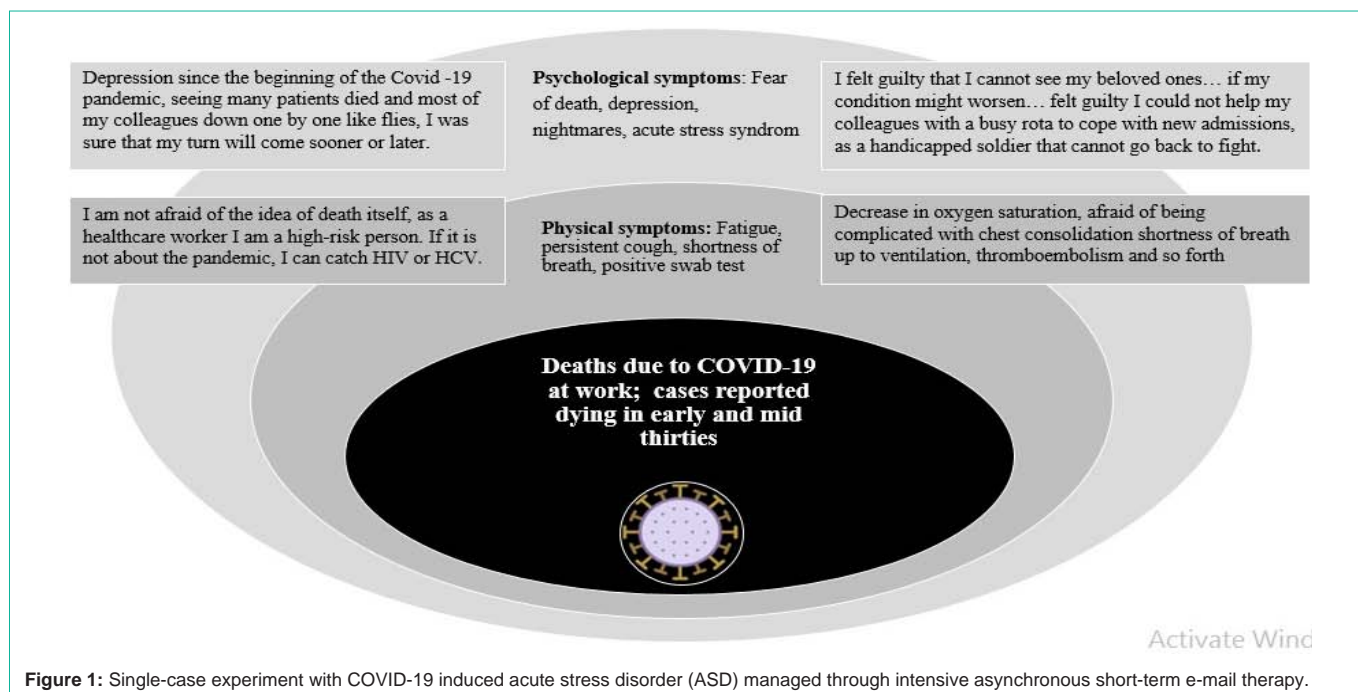
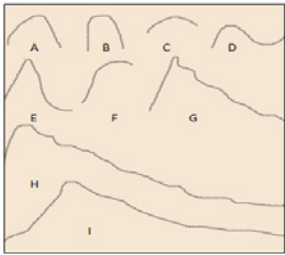


Figure 1: Single-case experiment with COVID-19 induced acute stress disorder (ASD) managed through intensive asynchronous short-term e-mail therapy.

**Table 1:** Case experiment description: Characteristics, treatments and outcome.

Case	Date	During COVID-19 contagion
Gender		Male
Family status		Married
Children		Father
Academic background		Doctor of medicine
Work		Health-care worker
Confirmed COVID-19	6 <sup>th</sup> , 8 <sup>th</sup> , 11 <sup>th</sup> May 2020	Swab tests: on 6th May, on 8th was false negative, developed symptoms: another swab test on 8th, and on 11 <sup>th</sup> confirmed positive
Self-isolation		+ 14 day
Informed consent	23 <sup>rd</sup> May	In written as well as agreement to publish the case
E- Mail Therapy	23 <sup>rd</sup> May	On average 6 + 6 mails pro day
Medication		None (no fever), conservative treatment, staying in bed
Previous therapy		None
CBT approach		Figure 1: Physical and psychological symptoms
Working on repetitive thinking		Figure 1; Metaphor
Confirmed negative COVID 19	18 <sup>th</sup> May	
Diagnosis	25 <sup>th</sup> May	Preliminary hypothesis: Acute stress reactions
Back to work	26 <sup>th</sup> May	
Validation of diagnosis	27 <sup>th</sup> May	By National Stressful Events Survey Acute Stress Disorder Short Scale (NSESSS; Kilpatrick, Resnick & Friedman, 2013). Result: 3,4 = severe stress
Outcome of the mail therapy: Ending	29 <sup>th</sup> May	It ended when I felt it is enough, because I felt we covered everything and there were sort of repetitions. I was also and kind of still, less patient from that depression/stress.
Benefits	29 <sup>th</sup> May	The benefits were feelings' expression, reminder that this is a temporary phase of feeling down and that I am currently (at that time) okay or almost recovered to go work.
Projective test: Constructed for this purpose. Highest point = Most painful.	30 <sup>th</sup> May	 <p>T: Which curve represents the course of the disorder?                      Case: I would say last row. I had minimal symptoms, the stress increased with isolation and worsening of the symptoms, then plateau and minimal improvement until almost recovering.</p>
1 Follow-up	10 weeks later	Answered Table 2 questionnaire
2 Follow up	9 months later	Answered Table 2 questionnaire

National Stressful Events Survey Acute Stress Disorder Short Scale (NSESSS; Kilpatrick et al., 2013) [10], which rendered the HP a mean of 3, 4 scores; in other words, severe acute stress disorder.

The triangulation, with the addition of the “CURVE”-chart (Table 1) supported the thinking that the period in isolation intensified the psychological symptoms: “I had minimal symptoms, the stress increased with isolation and worsening of the [physical] symptoms [occurred], then plateau[d] and minimal improvement until almost recovering (Table 1). As the COVID-19-induced severe stress-reaction was fierce but faded quite rapidly, and the HP considered himself able to return to work, the present outcome benefitted from a first follow-up after 10 weeks. Also, our case’s inner strength and belief helped him. “I am a believer even if I do not practice enough lately, yet, I had a feeling it is not the time for me to die. Something told me I will survive. God will heal us if and when he wants to.

Otherwise, if he lets us to suffer, it is for a reason. We always return to our beliefs when we are in a problem. It might be a reminder”

To establish that the asynchronous email CBT worked well a second follow-up was done 9 months later. Statistical computation for significant symptom improvement, revealed by Wilcoxon test a mean reduction in symptoms already between the first and second ratings (T=1.86, + ranks 28, - ranks 0, p <0.01). Statistical analysis by Friedman test along with Page L trend test revealed a steady symptom-improvement over all four measurements (p <0.001; Page L <0.001) (Table 2).

### Discussion

The present findings of a symptomatic HP in relation to COVID-19 contagion, supported the hypothesis of an incidence of severe ASD. Triangulation in terms of Socratic/maieutic questioning

**Table 2:** COVID-19 induced symptoms in health-care worker.

Symptoms	i	ii	iii	iv	Time	M	SD	M rank	Friedman Test; p<	Page L Test
Death anxiety	8	6	3	3	i	7.86	0.69	3.93		
Does family manage after my death	8	6	4	8	ii	5.86	0.69	2.86	16,61	258 >
Chest compression	8	7	2	2	iii	2.71	0.76	1.71		198
Other physical symptoms	7	6	2	0	iv	2.29	2.69	1.50	p<.001	p<0.001
Stress	9	5	3	1						
Depression	8	5	3	1						
Other psychological symptoms	7	6	2	1						

in the asynchronous short-term email therapy was used, and severe ASD was confirmed and validated by assessment using NSESSS (Kilpatrick et al., 2013) [10] along with a CURVE-chart. Madanes et al. (2020) claimed that individuals exposed to trauma may progress to ASD and/or to PTSD; COVID-19-related trauma and stressors may also give rise to adjustment conditions, depression, and anxiety disorders [11].

Furthermore, COVID-19 with its daily reminders of real-life dangers and deaths is acknowledged to induce much death anxiety in the populations [6]. Normally, CBT has been proven to produce significant cutbacks in death anxiety, with relief appearing to be particularly effective [12]. Tedeschi (2020) claims that online therapy works exactly like face-to-face therapy. In competition with the extensive daily use of technology, mental health support has now exceeded traditional therapeutic working ways in forms of e.g., emails for psychological treatment. Therefore, trauma-related incidents benefit from long-term follow-up as we did when we followed nine months the progression of the symptoms.

Carlbring et al. (2018) systematically reviewed and meta-analyzed studies in which internet CBT was directly compared with the effect of face-to-face CBT [13]. The findings indicated that the overall effect for the main outcomes was close to zero, implying that the two treatment formats are equally efficient in curing, for example, social anxiety disorder, panic disorder, and depressive symptoms among other psychiatric and somatic disorders. On the other hand, COVID-19 demanding distance between people caused a decrease of face-to-face therapies and the decrease was not compensated for by increases of remote psychotherapies. Further, Probst et al. (2020) implied that an undersupply of therapy for mental health in the COVID-19 lockdown is compulsory to compensate for due to the increased need for timely mental support in times of pandemic [7].

Madanes et al. (2020) drew attention to the pandemic's trauma-induced after-effects [11]. Consequently, as the present remote CBT email therapy was intensive and noticeably short, it was appropriate to validate its after-effects. Therefore, two follow-ups were done after the email CBT and it was found that both after 10 weeks as well as 9 months, a significant symptom improvement was disclosed. Our finding confirms that email CBT is a helpful and efficient tool when face-to-face therapy is out of question during the pandemic or due to other obstacles.

Moreover, Troyer et al. (2020) indicated that the COVID-19 pandemic triggers in HPs distress about ill health and an uncertain future [3]. They stated that the public and front-line HPs need valid

mental-health screening and treatment programs. We agree with this comment. An awareness is required, that in some individuals the psychological symptoms escalate during isolation and quarantine periods and override physical symptoms advising us to address them.

Furthermore, Magnavita et al. (2020) stressed that mental-health issues must be addressed in HPs who have been exposed to or contracted the contagion [2]. Health interventions for diminishing occupational stress and enhancing sleep quality are vital because sleep quality moderates anxiety. Furthermore, Ehrlich et al. (2020) claimed that the pandemic fosters fear among HP, who become anxious also about their co-workers, their families, their friends, communities, and country [14]. Yet, the HPs persist in their battle on the frontlines against COVID 19. However, they need encouragement and backing to withstand and overcome harmful effects during and after the COVID19 pandemic. This requires creativity and realization of remote counselling and effective remote interventions to support and preserve healthcare professional's mental well-being.

The limitations of the current study are that one cannot know when ASD occurs and therefore cannot apply for ethical approval beforehand, it also takes time to observe the severity of the case. However, approval was requested very early once ASD was confirmed. Another limitation includes lack of ability to generalize the presented symptoms. The strength of this case report is that the narrative aspects that make an in-depth understanding possible were done not retrospectively unlike most of the case reports but in real time and in a timely manner.

## Conclusion

The psychological symptoms, such as death anxiety, during isolation and quarantine periods intensify COVID-19 induced physical awkwardness in the healthcare professional. Consequently, both psyche's and soma's discomforts need to be appropriately and creatively addressed.

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