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Persistent post-covid symptoms in healthcare workers

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Background	Recent reports suggest a higher incidence of COVID-19 infections among healthcare workers (HCW). However, information about the long-term complications affecting this population is lacking.
Aims	Investigation of long-term impact of COVID-19 in HCW.
Methods	Seropositivity for SARS-CoV-2 antibodies was evaluated for the majority of HCW in an English teaching hospital 2 months following the peak of COVID-19 first wave. A questionnaire investigating the long-term complications was sent through global e-mail to HCW 4 months following the peak of the wave enquiring about the persistent health issues still affecting them at that point.
Results	Out of 3759 subjects tested for SARS-CoV-2 antibodies, 932 were positive (24%). Forty-five per cent of 138 HCW responding to the questionnaire reported persistent symptoms with 32% struggling to cope 3–4 months following the peak of the wave. Moderate-to-severe fatigue stood out as the most disabling symptom (39%) but mild-to-moderate shortness of breath, anxiety and sleep disturbance were almost universal in the subjects still struggling with symptoms. Only 16% consulted their general practitioner (GP) about their symptoms with only 2% taking sick leave after recovering from the acute illness.
Conclusions	Our data suggest that about a third of HCW who responded to the survey were still struggling to cope with the symptoms of what is now known as *long covid* several months after the acute COVID-19 infections. The overwhelming majority of this group seem to be reluctant to neither seek medical advice nor take sick leave.
Key words	fatigue; healthcare workers (HCW); long COVID.

Introduction

Evaluation of the long-term complications of COVID-19 focused initially on severely affected patients. Studying this group of patients was facilitated by the fact that they were invariably hospitalized and easier to follow up. The available data suggest that in this severely affected group of patients, respiratory symptoms, post-viral fatigue and mood disorders are the main complications [1].

The term *long covid* is now routinely used to describe post-COVID-19 complications in the less severe, mainly younger, none-hospitalized patients [2]. One approach to explore this issue is to examine the impact of COVID-19 infection in a well-defined population with an expected high level of exposure to SARS-COV-2 infection. In this short paper, we will report our findings of the pattern of COVID-19 infection and its impact on the health of healthcare workers (HCW) in an NHS Hospital. The data were collected to inform the establishment of a post-COVID-19 clinic to support the staff who are still struggling with health issues months after the peak of the April 2020 wave.

Methods

Wrightington, Wigan and Leigh NHS Teaching Trust (WWL) is the main healthcare provider for the borough of Wigan in the North West of England. It employs ~4500 staff members.

During June 2020, a programme for SARS-CoV-2 antibody testing was launched for WWL staff. Out of 3759 of staff tested for SARS-CoV-2 antibodies in June 2020, 932 (24%) were positive.

Key learning points

What is already known about this subject:

- The COVID-19 pandemic has disproportionally impacted on the health of healthcare workers with higher levels of infection and increasing levels of stress and mental health issues.
- Long Covid is a complex condition which affects many survivors of COVID-19 infections. The exact pathology is poorly understood but its impact on health and subsequently social and vocational roles is substantial.
- Fatigue and respiratory symptoms are the most common symptoms of *long covid*. In the UK, guidelines were published to support the development of specialist teams supporting *long covid* patients.

What this study adds:

- Our data not only suggest a high incidence of COVID-19 infections among healthcare workers but also report a high prevalence of debilitating post-COVID-19 symptoms with post-viral fatigue commonly reported.
- Healthcare workers suffering from *long covid* symptoms seem to be reluctant to either take sick leave or seek medical advice.

What impact this may have on practice or policy:

- Occupational Medicine can play a significant role on addressing *long covid* among healthcare workers. Earlier support, changes to sick leave policy and collaboration with the respiratory and rehabilitation departments can lead to improving outcomes and reduction of the risk of long-term disability.
- At the time of writing this article, the healthcare workers suffering from these symptoms are battling the second wave of the pandemic. Further research into the impact of the pandemic on healthcare workers and provision of appropriate support is urgently needed.

A survey monkey questionnaire was sent electronically by global e-mail including questions about the respondents demographics, acute symptoms and hospitalization, method of confirmation of the diagnosis, persistent symptoms and their severity and if they seek medical help or had sick leave.

The survey monkey report was analysed and the results summarized.

Results

One hundred and thirty-eight responded to the questionnaire as they believed that they suffered from COVID-19. One hundred and fourteen had the diagnosis confirmed by either a Polymerase Chain Reaction (PCR) test during the acute illness or antibody test afterwards. Twenty-four respondents believed that they had COVID-19 but had no laboratory confirmation.

During the acute phase of the illness, only three (2%) respondents were admitted to hospital. One hundred and two (74%) respondents had a period of less than 14 days sick leave. The most common symptoms in the acute stage were loss of smell and taste (59%), shortness of breath (55%), cough (50%) and fever (48%).

The questionnaire was completed on the last week of July to first week of August 2020 (3–4 months from the peak of the wave). At that point, 61 respondents (45%) felt that they are still suffering from continuing symptoms. Fifty-four (39%) reported moderate-to-severe fatigue. Fifty-five (40%) reported only mild-to-moderate shortness of breath. Sleep disturbance and mood disorders were also common (49 and 44%, respectively).

Out of the 138 respondents, 3 of 11 male respondents (27%) reported persistent symptoms compared to 58 out of 127 female respondents (45%) reporting persistent symptoms. Eighty-three per cent of WWL employees are females.

Despite the fact that 42 (31%) of respondents felt that they were struggling to cope with their symptoms, Only 16 respondents (12%) consulted their general practitioner (GP) about the symptoms and only 3 (2%) had a period of sick leave following the initial leave they had during the acute phase of their illness.

Discussion

Following the peak of the initial wave of COVID-19 during March and April 2020, most of the focus evaluating the effects of the pandemic on HCW was on the mental health impact of such stressful and overwhelming experience [3]. The high levels of COVID-19 infections in our hospital's HCW during the first wave were consistent with published data from other UK hospitals [4].

Our participants' reports of their long-term symptoms are consistent with the classification of the National Institute for Health Research (NIHR) published in October 2020 [5]. The report suggests two distinct categories of *long covid* with the first primarily affecting hospitalized patients with either organ damage or ICU-related issues. The NIHR description of the more common symptoms related to the second category (post-viral fatigue and continuing fluctuating and migratory symptoms) corresponds with the symptoms our cohort reported.

Several characteristics of the affected subjects were evident. Females seemed to be more likely to suffer from long-term healthcare problems post-COVID-19 (91%) with only 83% of trust employees being females. COVID-19 infection is more lethal in males but females are more likely to suffer from long-term complications [6]. The specific way the immune response may differ between males and females is the prevailing hypothesis explaining such discrepancy [7].

Despite the fact that our subjects acknowledged the severity of their symptoms and their struggle to cope, they seemed reluctant to neither seek medical advice nor take sick leave. This is a major cause for concern as the evolution of chronicity in post-viral fatigue patients is primarily secondary to the lack of appropriate advice and the subsequent development of maladaptive coping strategies [8].

There are many limitations to our study especially the rigid structure of the questionnaire limiting the subjects' ability to detail their health issues and the impact on their life. We used subjective descriptions of severity and that made further analysis and categorization difficult. The relatively small number of respondents can naturally increase the risk of selection bias.

The results of the survey have galvanized the hospital's clinical and management teams and a staff post-Covid clinic was established. HCW can self-refer to a specific e-mail address. A consultant in rehabilitation medicine triages the referrals and can either arrange a clinic assessment in one or more of respiratory, rehabilitation, occupational medicine and/or ENT clinics as per clinical need or undertake a telephone consultation. More than 200 enquiries were made to the clinic with more than 100 staff members seen in the specialist clinics. This infrastructure is now being utilized to expand the service to the more than 300 000 borough residents.

Competing interests

None declared.

References

1. Halpin SJ, McIvor C, Whyatt G *et al.* Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: a cross-sectional evaluation. *J Med Virol* 2021;**93**:1013–1022.
2. Mahase E. Covid-19: what do we know about 'long covid'? *Br Med J* 2020;**370**:m2815.
3. Spoorthy MS, Pratapa SK, Mahant S. Mental health problems faced by healthcare workers due to the COVID-19 pandemic—a review. *Asian J Psychiatr* 2020;**51**:102119.
4. Grant JJ, Wilmore SMS, McCann NS *et al.* Seroprevalence of SARS-CoV-2 antibodies in healthcare workers at a London NHS trust. *Infect Control Hosp Epidemiol* 2021;**42**:212–214.
5. NIHR. Living with Covid 19. A Dynamic Review of the Evidence Around Ongoing Covid 19 Symptoms. 2020. https://evidence.nihr.ac.uk/themedreview/living-with-covid19 (13 February 2021, date last accessed).
6. Zheng Z, Peng F, Xu B *et al.* Risk factors of critical & mortal COVID-19 cases: a systematic literature review and meta-analysis. *J Infect* 2020;**81**:e16–e25.
7. Gemmati D, Bramanti B, Serino ML, Secchiero P, Zauli G, Tisato V. COVID-19 and individual genetic susceptibility/receptivity: role of ACE1/ACE2 genes, immunity, inflammation and coagulation. Might the double X-chromosome in females be protective against SARS-CoV-2 compared to the single X-chromosome in males? *Int J Mol Sci* 2020;**21**:3474.
8. Stormorken E, Jason LA, Kirkevold M. Factors impacting the illness trajectory of post-infectious fatigue syndrome: a qualitative study of adults' experiences. *BMC Public Health* 2017;**17**:952.