

Longitudinal survey of UK veterans with pre-existing mental health difficulties: mental health during the COVID-19 pandemic

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ABSTRACT

Introduction At the start of the COVID-19 pandemic, individuals with pre-existing mental health difficulties were thought to be vulnerable to mental health deterioration due to the emerging threat and the actions taken to control infection rates. Yet, there remained a paucity of research investigating changes in veteran well-being, a population facing higher rates of mental health difficulties compared with the general public. This longitudinal study aimed to investigate the mental health and well-being of UK veterans with pre-existing mental health difficulties at two time points during the COVID-19 pandemic.

Methods UK treatment-seeking veterans (N=121) completed an online survey administered towards the end of the first UK lockdown in June 2020 and 1 year later. Data were gathered on sociodemographic characteristics as well as psychometric measures of post-traumatic stress disorder (PTSD), common mental disorders (CMDs), anger difficulties and alcohol misuse.

Results The proportion of veterans meeting criteria of PTSD, anger and alcohol misuse remained similar across the two time points, while significantly fewer veterans met criteria for CMDs 1 year later. A notable proportion of the sample reported challenges in attending mental and physical health appointments, which was positively associated with not working and negatively associated with more COVID-19-related stressors.

Conclusions These findings suggest that, to date, veterans with pre-existing mental health difficulties appear to demonstrate resilience as the COVID-19 pandemic progressed. However, as the pandemic continued, veterans faced significantly more COVID-19-related stressors, less social support, as well as difficulties attending health appointments.

The novel coronavirus (COVID-19) was officially declared a global pandemic in March 2020.¹ In addition to the number of infections and deaths worldwide, the COVID-19 pandemic has significantly disrupted daily life in countries across the globe through the implementation of various strategies to mitigate the spread of the virus.² Within the UK, daily life continued to be disrupted by rapidly changing restrictions including social distancing, remote working, self-isolating and national lockdowns.³ Although early findings revealed this increased psychological distress among the general UK population,⁴ the effect is argued to be small and there appeared to be evidence of general resilience in public mental health as the COVID-19 pandemic progressed.⁵

Key messages

- ⇒ Severity of post-traumatic stress disorder (PTSD), anxiety and depression, anger difficulties and alcohol use remained similar between the first UK lockdown and 1-year follow-up.
- ⇒ Significantly fewer veterans met case criteria of anxiety and depression difficulties at follow-up.
- ⇒ Significantly fewer veterans perceived their PTSD symptoms to have worsened at follow-up compared with baseline.
- ⇒ A notable number of veterans experienced challenges in attending mental and physical health appointments.
- ⇒ Veterans who were not working and who experienced less COVID-19-related stressors experienced more challenges in attending mental and physical health appointments.

Contrary to accumulating findings suggesting a worsening of mental health among individuals with pre-existing psychological difficulties,⁶ a recent meta-analysis concluded that there remained a lack of evidence of psychological deterioration among such individuals as the pandemic progressed.⁷ Still, findings from a latent class analysis of mental health responses among UK adults revealed that despite relative resilience among most adults, those with pre-existing mental or physical health difficulties were more likely to show an initial and sustained increase in symptoms or a steady decline in well-being.⁸ This study further demonstrated that COVID-19-related stressors including infection, local lockdowns and financial difficulties appeared to increase the risk of such mental health deterioration.⁸

Despite the lack of clarity regarding the potential increased vulnerability of decline in psychological well-being among those with pre-existing mental health difficulties, there are limited studies investigating the impact of the COVID-19 pandemic on veterans. Compared with the general public, veterans are at increased risk of mental health difficulties including post-traumatic stress disorder (PTSD) (6.2%), common mental disorders (CMDs) including anxiety and depression (21.9%), and alcohol misuse (10.0%).⁹ Initial data suggested that UK veterans with pre-existing mental health symptoms, especially those with lower social support and more COVID-19-related



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stressors, were likely to experience increased CMDs during the first UK lockdown.¹⁰ Such findings are in line with reports of a nationwide UK charity indicating a 33% increase in veterans seeking support during May/June 2020.¹¹ Another study among Israeli veterans revealed that those with previous combat or captivity trauma were highly vulnerable to mental health deterioration during the COVID-19 pandemic, showing higher rates and greater severity of PTSD.¹² Importantly, individuals experiencing severe psychological ill-health may be more susceptible to difficulties with social isolation and loneliness during the pandemic,¹³ and poor social connection can work to maintain PTSD difficulties.¹⁴ Such findings suggest that COVID-19 mitigation measures such as self-isolation may exacerbate veteran difficulties, for example, by presenting practical obstacles for veterans to engage with appropriate social (and, potentially, health) support.

The aim of the present longitudinal study was to investigate changes in mental health and well-being of veterans with pre-existing mental health difficulties between June 2020 and 1-year follow-up. The study also aimed to explore the prevalence of COVID-19-related stressors and explore predictors of difficulties in attending mental and physical health appointments during the pandemic.

METHODS

Setting

Participants were recruited via a UK charity specialised in delivering mental health support to veterans. Given the nationwide reach of the charity and the high number of annual referrals (approximately 2000),¹⁵ the present sample is assumed to be representative of the wider treatment-seeking UK veteran community. Furthermore, a comparison of the veteran population engaging with the UK charity and an Australian national veteran service demonstrated similarity between the two populations,¹⁶ suggesting that the sample may be similar to other treatment-seeking veteran populations.

Participants

The sample consisted of treatment-seeking veterans, which was defined as attending at least one appointment with the charity during the period of 1 January 2019–31 December 2019. Participants of the present study had previously been selected at random to take part in a cross-sectional survey exploring the impact on the COVID-19 pandemic on veterans with pre-existing mental health difficulties.¹⁰ Of the 275 veterans who took part in the initial survey, 34 participants were excluded from the present study due to withdrawing consent or invalid emails. Of the 241 veterans contacted for the follow-up survey, 121 responded (50.2%) ($M_{age}=49.9$, $SD_{age}=10.3$).

Design and procedure

A longitudinal design was adopted, with the first time point at the end of the first UK lockdown (June–July 2020) and a 1-year follow-up (June 2021). Data were collected via an online survey platform, SurveyMonkey. At each time point, participants were emailed an invitation to take part in the study. They were sent a total of five and three email invitations at baseline and follow-up, respectively. The email informed them of the study aims and the voluntary nature of participation, and included a link to the online survey. Participants were provided with instructions to opt out if they did not wish to take part.

Materials

Sociodemographic information including age, gender, relationship status and current living arrangement was collected at the first time point.

Mental health and well-being

Mental health and well-being symptoms over the previous 4 weeks were assessed at both time points using a range of questionnaires. Symptoms of PTSD were assessed using the 20-item Post-traumatic Stress Disorder Checklist.¹⁷ A cut-off score of 34 was used, as previously demonstrated to indicate probable PTSD in a sample of UK treatment-seeking veterans.¹⁸ CMD symptoms (ie, anxiety and depression) were assessed using the 12-item General Health Questionnaire.¹⁹ A cut-off score of 4 indicates likely CMDs. Difficulties with anger were assessed using the five-item Dimensions of Anger Reactions-Revised.²⁰ A cut-off score of 12 indicates likely anger difficulties. Hazardous alcohol use was assessed using the 10-item Alcohol Use Disorders Identification Test (AUDIT).²¹ A cut-off score of 8 indicates likely hazardous drinking. Social support was assessed using the brief six-item Perceived Social Support Questionnaire,²² with lower scores indicating lower perceived support. For each questionnaire, participants were also asked ‘how different are these feelings to how you felt during the first lockdown last year’ on a 5-point scale ranging from ‘much worse’ to ‘much better’. After the AUDIT, participants were asked to report perceived difference on a 3-point scale ranging from ‘less than usual’ to ‘more than usual’.

COVID-19-related stressors and healthcare services

At both time points, information was collected on the impact of COVID-19 pandemic. Participants reported on the impact of the pandemic, including probable infection, required isolation, bereavement and changes in employment. They also reported any financial (eg, started using a food bank), health (eg, difficulties with your health) and other life (eg, difficulties with family or other social relationships) COVID-19-related stressors. Finally, participants reported at follow-up whether they had required an appointment for a new or existing mental or physical health condition, and whether the pandemic impacted engaging with the necessary healthcare support.

Data analysis

Data were screened for data entry errors and missing values. Participants were excluded from analyses if more than 50% of all data were missing. If 25% or fewer items per measure were missing, the missing values were replaced with the lowest value, while the measure was excluded from analyses if more than 25% of items were missing.⁹

Initial analyses explored differences between survey responders and non-responders. A χ^2 test was conducted to explore differences in age. Mann-Whitney tests were conducted to explore differences in gender, relationship status, living arrangements, employment status, as well as mental health measures of PTSD, CMDs, anger difficulties and alcohol use.

To investigate changes in mental health between baseline and follow-up, multiple paired sample t-tests of severity of scores were conducted for measures of PTSD, CMDs, anger difficulties and alcohol use, as well as total proportion meeting case criteria at the two time points. Total proportion meeting case criteria was treated as a continuous variable. Additional paired sample t-tests were conducted to investigate: (1) differences in participant perceptions of whether PTSD, CMDs, anger and

Table 1 Baseline differences between responders and non-responders

Baseline variables	Responders, n (%) n=121 (50.2%)	Non-responders, n (%) n=120 (49.8%)	P value*
Age (mean, SD)	49.9 (10.3)	47.7 (11.8)	0.116
Sex			
Female	4 (3.3)	7 (5.8)	0.347
Male	117 (96.7)	113 (94.2)	
Relationship status			
In a relationship	74 (61.2)	86 (71.7)	0.119
Single	45 (37.8)	34 (28.3)	
Living alone or not			
No	77 (68.8)	76 (76.0)	0.240
Yes	35 (31.2)	24 (24.0)	
Employment status			
Working	76 (67.9)	54 (54.0)	0.05*
Not working	36 (31.1)	46 (46.0)	
PTSD case (PCL-5)	63 (55.8)	60 (55.1)	0.916
CMD case (GHQ-12)	94 (79.0)	90 (78.3)	0.892
Anger case (DAR-5)	62 (54.9)	61 (58.7)	0.574
Alcohol case (AUDIT)	36 (47.4)	31 (46.3)	0.895

Ns may not add up to 121 for responders and 120 for non-responders because of missing data. AUDIT scores restricted to only participants who had consumed alcohol in the previous month.

*Differences were explored using Mann-Whitney tests, with the exception of a χ^2 test to explore differences in age.

AUDIT, Alcohol Use Disorders Identification Test; CMD, common mental disorder; DAR-5, Five-item Dimensions of Anger Reactions-Revised; GHQ-12, 12-item General Health Questionnaire; PCL-5, Post-traumatic Stress Disorder Checklist; PTSD, post-traumatic stress disorder.

alcohol use worsened due to the COVID-19 pandemic; and (2) differences in number of COVID-19-related stressors (financial, health, other) and social support between baseline and follow-up. Differences in COVID-19 infection and bereavement were inspected descriptively.

Finally, COVID-19-related stressors were summed and split into tertiles to identify participants who faced 'low' (ie, lowest tertile) versus 'high' (ie, highest tertile) total number of stressors. To investigate predictors of mental and physical health appointment difficulties, separate logistic regressions were conducted with relationship status, living arrangement, employment status, total COVID-19-related stressors and social support.

RESULTS

Survey responders versus non-responders

The study had a response rate of 50.2%. Responders and non-responders significantly differed in terms of employment status, $\chi^2(1)=4.28$, $p=0.039$. Among responders, 67.9% reported working and 32.1% reported not working, whereas 54.0% and 46.0% of non-responders reported working and not working, respectively. There were no significant differences in other sociodemographic characteristics or in mental health difficulties. Comparisons of responders and non-responders are described in [Table 1](#).

Changes in mental health difficulties during COVID-19 pandemic

Mental health difficulties at baseline and follow-up are described in [Table 2](#). There were no significant differences in PTSD severity or proportion meeting PTSD criteria between baseline and follow-up ($p>0.594$). Significantly fewer participants reported perceiving PTSD difficulties worsening due to the pandemic at follow-up compared with baseline, $t(105)=2.05$, $p=0.043$. There were no significant differences in CMD symptom severity between baseline and follow-up ($p=0.24$). There was also no significant difference in terms of perceived worsening of symptoms due to the pandemic, however this was just above the significance margin, $t(118)=1.94$, $p=0.054$. Compared with baseline, a significantly smaller proportion of participants met CMD criteria at follow-up, $t(118)=2.92$, $p=0.004$.

In terms of anger difficulties, there were no significant differences in severity, proportion meeting criteria of anger difficulties

Table 2 Reported mental health and well-being outcomes at baseline and follow-up

	Baseline	Follow-up	t	df	P value*
PTSD					
PCL-5 score, m (SD)	38.7 (19.5)	38.0 (19.1)	0.53	105	0.594
PTSD case, n (%)	63 (55.8)	65 (58.0)	-0.45	105	0.657
PTSD worse to COVID-19, (%)	76 (67.3)	59 (52.7)	2.05	105	0.043
CMDs					
GHQ-12 score, m (SD)	7.05 (3.73)	6.61 (4.54)	1.18	118	0.240
GHQ-12 case, n (%)	94 (78.9)	80 (66.1)	2.92	118	0.004
GHQ-12 worse to COVID-19, n (%)	84 (70.6)	70 (57.9)	1.94	118	0.054
Anger difficulties					
DAR-5 score, m (SD)	13.3 (5.55)	13.5 (5.20)	-0.29	103	0.771
Anger case, n (%)	62 (54.9)	68 (61.8)	-1.52	103	0.131
Anger worse to COVID-19, n (%)	59 (52.2)	55 (55.0)	0.31	103	0.759
Alcohol misuse					
AUDIT score, m (SD)	8.87 (7.62)	8.54 (7.56)	0.74	67	0.459
Hazardous drinking (8+) case, n (%)	36 (47.4)	45 (41.3)	-0.70	67	0.484
Alcohol use worse to COVID-19, n (%)	32 (28.6)	21 (19.3)	1.52	102	0.131

Frequencies may not add up n=121 due to missing values.

*Differences were investigated using paired sample t-tests.

AUDIT, Alcohol Use Disorders Identification Test; CMDs, common mental disorders; DAR-5, Five-item Dimensions of Anger Reactions-Revised; GHQ-12, 12-item General Health Questionnaire; PCL-5, Post-traumatic Stress Disorder Checklist; PTSD, post-traumatic stress disorder.

Table 3 COVID-19 and functioning outcomes at baseline and follow-up

	Baseline	Follow-up	df	t	P value*
COVID-19 stressors					
Total stress score, m (SD)	3.92 (2.46)	11.4 (2.90)	101	-15.31	<0.001
Financial stressors, m (SD)	0.75 (1.07)	4.11 (1.17)	101	-16.95	<0.001
Health stressors, m (SD)	0.89 (1.00)	3.60 (1.07)	101	-15.93	<0.001
Other stressors, m (SD)	2.28 (1.30)	3.67 (1.48)	101	-5.66	<0.001
Social support					
Perceived social support, m (SD)	18.98 (6.86)	16.7 (5.55)	103	4.39	<0.001

Ns may not add up to n=121 due to missing values.
* Differences were investigated using paired sample t-tests.

or perceived worsening due to the pandemic. Finally, there were no significant differences in alcohol misuse severity, proportion meeting criteria for hazardous drinking or perceived worsening due to the pandemic.

Changes in COVID-19 and functioning outcomes

A total of 29 (25.9%) participants reported a probable COVID-19 infection at baseline, compared with 32 (29.6%) at follow-up. A total of 20 (17.9%) participants reported experiencing a COVID-19-related bereavement at baseline, compared with 34 (31.5%) at follow-up.

COVID-19-related stressors and social support at baseline and follow-up are described in Table 3. There was no significant difference in report of probable COVID-19 infection between baseline and follow-up ($p=0.374$). Significantly more participants reported COVID-19 bereavement at follow-up compared with baseline, $t(101)=-3.64$, $p<0.001$. There were significant differences in terms of COVID-19-related stressors, with participants reporting a significantly greater number of financial, health, other and total stressors at follow-up compared with baseline. Finally, perceived social support was significantly lower at follow-up compared with baseline, $t(103)=4.39$, $p<0.001$.

Difficulties attending mental and physical health appointments

Predictors of participant difficulties in attending mental and physical health appointments are described in Table 4. A total

of 35.5% and 47.9% of participants reported difficulties in attending mental and physical health appointments, respectively. Compared with participants who were working, those who were not working reported greater difficulty in attending mental ($OR=3.84$, $p=0.021$, 95% CI (1.22 to 12.00)) and physical ($OR=5.06$, $p=0.008$, 95% CI (1.53 to 16.70)) health appointments. Compared with participants with fewer COVID-19-related stressors at follow-up, those who experienced a high number of COVID-19-related stressors were less likely to have difficulties with attending mental ($OR=0.09$, $p<0.001$, 95% CI (0.03 to 0.34)) and physical ($OR=0.10$, $p<0.001$, 95% CI (0.03 to 0.30)) health appointments.

DISCUSSION

The present study examined the impact of the COVID-19 pandemic on the mental health of UK veterans with pre-existing mental health difficulties. This was investigated by comparing symptom severity and proportion meeting case criteria of mental health disorders between the UK's first national lockdown and 1-year follow-up. Findings revealed that the severity and prevalence of PTSD, anger difficulties and alcohol misuse did not change as the pandemic progressed. While there were no changes in severity of CMD symptoms, significantly fewer veterans met criteria of such difficulties at follow-up. Despite no significant differences in perceived worsening of CMDs, anger and alcohol misuse over time, significantly fewer veterans perceived their PTSD symptoms to have worsened at follow-up compared with

Table 4 Predictors of having difficulty attending health appointments over the previous 12 months†

	Mental health appointment difficulties n=43 (35.5%)		Physical health appointment difficulties n=58 (47.9%)	
	N (%)	OR (95% CI)	N (%)	OR (95% CI)
Relationship status				
In a relationship	24 (32.4)	1.00	36 (48.7)	1.00
Not in a relationship	17 (37.8)	1.26 (0.30 to 5.25)	20 (44.4)	1.03 (0.14 to 7.62)
Employment status				
Working	22 (29.0)	1.00	30 (39.5)	1.00
Not working	18 (50.0)	3.84 (1.23 to 12.00)*	23 (63.9)	5.06 (1.53 to 16.74)*
Living alone or not				
No	26 (33.8)	1.00	36 (46.8)	1.00
Yes	14 (40.0)	0.42 (0.10 to 1.80)	17 (48.6)	0.31 (0.03 to 2.89)
COVID-19 stressors				
Low group	40 (50.1)	1.00	52 (65.8)	1.00
High group	3 (10.3)	0.09 (0.03 to 0.34)*	6 (20.7)	0.10 (0.03 to 0.30)*
Social support, m				
Appointment difficult vs not	17.1 vs 15.4	0.96 (0.88 to 1.05)	17.5 vs 15.5	0.97 (0.88 to 1.08)

Ns may not add up to n=121 due to missing values.

* $P<0.05$.

†Predictors were investigated using logistic regression models, adjusted for all other variables in table.

baseline. Together these findings suggest a relative resilience of the mental health of veterans with pre-existing mental health difficulties as the COVID-19 pandemic progressed. These findings are in line with conclusions from the recent meta-analysis suggesting that individuals with pre-existing psychological ill-health are not particularly vulnerable to further exacerbation of symptoms as the pandemic progressed,⁷ and with findings within the general population demonstrating a relative resilience of mental health following the initial onset of the pandemic.⁵

It is worth noting that a substantial number of the current sample of treatment-seeking veterans still met criteria of PTSD (58.0%), CMDs (66.1%), anger difficulties (61.8%) and hazardous alcohol use (41.3%) at follow-up. These rates do however appear lower than prevalence rates among UK treatment-seeking veterans prior to the COVID-19 pandemic (82.4% PTSD, 72.3% CMDs, 74.4% anger difficulties, 42.7% alcohol misuse).²³ The study thus provides indication that even in face of increased COVID-19-related financial, health and other stressors as well as lower levels of perceived social support, mental health remained resilient.⁵ Veterans' symptoms may have been found to reduce over time as COVID-19 mitigation measures, such as lockdowns and social distancing, may have reduced veteran contact with external stressors that could exacerbate, for example, PTSD symptoms. Alternatively, the observed findings may relate to nature of veteran mental health difficulties. Research among Israeli veterans has shown that those with combat or captivity trauma may be more vulnerable to mental health deterioration during the COVID-19 pandemic,¹² suggesting that those who experienced other types of traumas or stressors may be less at risk. Such focus lies outside the scope of the current paper.

The present study further revealed that a notable proportion of veterans with pre-existing mental health difficulties faced challenges in attending mental (35.5%) and physical health (47.9%) appointments during the COVID-19 pandemic. Veterans who were not working were found to report greater difficulties in attending mental and physical health appointments. Previous US findings have similarly suggested that employed veterans are more likely to successfully engage in psychological treatment.²⁴ One reason for this may be that veterans who are not working may be facing greater functional impairments that create a barrier for engaging with support. Alternatively, veterans who are not working may be facing greater financial struggle that may impact being able to physically attend appointments due to, for example, cost of transportation. It remains outside the scope of the current paper and further research is necessary to understand why veterans who are not working may face greater difficulties engaging with support during the COVID-19 pandemic. It is also worth noting that there remains limited insight into whether the appointments that participants had difficulty attending were offered in person or virtually, as many appointments offered during the COVID-19 pandemic were likely delivered online.

The findings revealed that veterans who faced a greater number of COVID-19-related stressors were less likely to experience difficulties in attending mental and physical health appointments. Previous research has indicated that PTSD and elevated somatic symptoms may predict seeking treatment among veterans.²⁵ It remains plausible that veterans who perceived their mental or physical health symptoms to have worsened due to the COVID-19 pandemic may have been more motivated to acquire the relevant support. However, further investigation could shed light on whether difficulties in support engagement may relate to the nature of COVID-19-related stressors. For example, veterans experiencing increased financial challenges may need to apply

for social benefits, a process which may benefit from proof of engaging with mental and/or physical health support. Finally, nearly one-third of the sample reported experiencing a COVID-19-related bereavement. Given the mortality rate within the UK, this figure appears higher than may be expected and suggests that further work may be required to understand the implications.

Limitations

The present study had limitations that require consideration. First, it is unclear whether findings of the present study hold implications for the larger UK veteran population. The sample can be considered as representative of the treatment-seeking veteran population. However, as veterans may face a range of barriers in accessing mental health support,²⁶ there remains a lack of understanding of the impact of COVID-19 on veterans with pre-existing mental health difficulties who are not seeking support. Furthermore, it is also worth noting that despite limited differences between responders and non-responders, a potential response bias cannot be entirely ruled out. Second, data were not collected prior to the outbreak of the pandemic. As such, only tentative comparisons can be made about the prevalence rates of pre-COVID-19 mental health difficulties within treatment-seeking veterans as the previous study used the same random sampling strategy with a different cohort of participants.²³ Third, sociodemographic information was not collected at follow-up, and as such it remains unclear whether factors such as relationship or employment status were impacted by the COVID-19 pandemic and what role this may have played on mental health difficulties. Finally, it remains unclear whether difficulties in attending mental and physical health appointments were related to appointments delivered in person, online or both.

CONCLUSIONS

The present study is among one of the first to investigate the longitudinal impact of COVID-19 on the mental well-being of veterans with pre-existing mental health difficulties. While the current existing literature has compared the impact of COVID-19 with pre-pandemic mental health of veterans, the present study provides insight into how veteran mental health progressed as the pandemic continued. Findings of the present study suggest that veterans with pre-existing mental health difficulties have demonstrated a resilience of mental health as the pandemic progressed, both in terms of proportion of those meeting criteria for PTSD, anxiety and depression, anger difficulties and alcohol use, as well as perceived impact of COVID-19 pandemic on their mental health symptoms. Nonetheless, it remains plausible that the negative impact of the COVID-19 pandemic may take time to be evident, for example, as the economic impact may continue to be felt. As such, there remains a need for further longitudinal studies to examine changes in mental health presentations of veterans with pre-existing mental health difficulties. Finally, there remains a need to further understand difficulties veterans may face in engaging with mental and physical health support, and to gain insight into the well-being of veterans who experience mental health difficulties but have not sought out support.

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