

# The impact of having inadequate safety equipment on mental health

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<b>Background</b>	Concerns are being raised about the impact of inadequate safety equipment on the mental health of healthcare workers during the COVID-19 medical response.
<b>Aims</b>	To assess the impact of inadequate safety equipment on the mental health of service personnel deployed on operations in order to better understand the impact on those working under the similarly demanding conditions of the COVID-19 medical response.
<b>Methods</b>	Self-report surveys were conducted in four operational environments with 3435 personnel providing data. Surveys recorded data on socio-demographic, military and operational characteristics, mental health measures and specific occupational stressors. Analysis through logistic regression explored the association between inadequate equipment and all other factors.
<b>Results</b>	A total of 3401 personnel provided data on their perceptions of the adequacy of their equipment, of which 532 (15%) stated that they had a lot of concerns that they did not have the right equipment in working order. Analysis found significantly greater odds of reporting symptoms of common mental health disorders (CMD), 2.49 (2.03–3.06), post-traumatic stress disorder (PTSD), 2.99 (2.11–4.24), poorer global health 2.09 (1.62–2.70) and emotional problems 1.69 (1.38–2.06) when individuals reported working with inadequate equipment. Analyses remained significant when adjusted for confounding factors such as rank, sex and operational environment.
<b>Conclusions</b>	An individual's perception of having inadequate equipment is significantly associated with symptoms of CMD, probable PTSD, poorer global health and increased reporting of emotional problems. This in turn may impact on their ability to safely carry out their duties and may have longer-term mental health consequences.
<b>Key words</b>	COVID-19; mental health; presenteeism; protective equipment.

## Introduction

There are frequent media reports and questions to the government relating to whether NHS and other key workers have sufficient equipment to safely carry out their roles. Furthermore, concerns about the relationship between inadequate equipment and the mental health and deaths of healthcare workers have been raised by the British Medical Association (BMA) [1] and the Royal College of Nursing (RCN) [2].

The Health and Safety Executive (HSE) define work-related stress as an adverse reaction to excessive pressures

or demands placed upon individuals [3]. This is associated with presenteeism, a reduction in work productivity including poorer quality of patient care, increased staff turnover and mental health disorders [4]. In 2018/19, 602 000 workers in the UK suffered from work-related stress, depression or anxiety with 12.8 million working days lost [5].

The UK Armed Forces have considerable experience of working in stressful environments, adapting to new threats at short notice, in unpleasant conditions for prolonged periods with limited resources. They have also carried out extensive research in order to better understand the stressors and mitigate against them [6].

## Key learning points

### What is already known about this subject:

- Concerns are being raised in the media about inadequate safety equipment for healthcare workers during the COVID-19 response.
- Work-related stress is associated with presenteeism, poorer mental health and increased staff turnover.

### What this study adds:

- The perception of having inadequate equipment has a significant association with poorer mental health within personnel working in demanding environments.

### What impact this may have on practice or policy:

- The results suggest the need for robust psychological support is required to protect the mental health of all staff, especially those who feel that they have not been supplied with sufficient work-related equipment.

This paper examines the association between inadequate equipment and mental health using data from four military operations to further understand how this issue might affect healthcare workers in the demanding COVID-19 environment.

## Methods

A total of 3435 military personnel were surveyed across four operational environments; Iraq and Afghanistan in 2009 [7] and 2010 [8], respectively, and operations between the Persian Gulf and South Atlantic in 2015 [9]. Each survey recorded socio-demographic details, military and operational characteristics, the 12-item General Health Questionnaire (GHQ-12) [10] and the Post-Traumatic Stress Disorder Checklist-Civilian version (PCL-C) [11]. Self-rated general health was assessed using the Short Form Health Survey (SF-36) [12]. The survey also explored work-related stressors, specifically whether they were troubled by not having the right equipment in working order.

## Results

A total of 3401 (99% responder rate) responded to the question asking whether they were troubled by having inadequate equipment, with 532 (15%) endorsing the statement (Table 1). Analysis found significantly greater odds of reporting symptoms of common mental health disorders (CMD), 2.49 (2.03–3.06), post-traumatic stress disorder (PTSD), 2.99 (2.11–4.24), poorer global health 2.09 (1.62–2.70) and emotional problems 1.69 (1.38–2.06) when individuals reported working with inadequate equipment (Table 2). Analyses remained significant when adjusted for confounding factors such as rank, sex and operational environment.

## Discussion

This study found significant associations between the perception of having inadequate equipment and poorer mental health in personnel operating in an arduous environment, a situation similar to the current COVID-19 response given the tangible threat, persistent pressure and uncomfortable working conditions.

Previous research shows that poorer mental health is often associated with significant functional impairment [13] and has identified that healthcare workers are at an increased risk of presenteeism in relation to infectious illnesses [14]. Whilst poorer mental health may impact on their ability to carry out their duties efficiently and safely with catastrophic consequences to both staff and patients, the individual is also at risk of longer-term difficulties such as burnout [15,16] which is associated with depression [17] and higher staff turnover [18].

Healthcare managers should be aware that staff who complain about poor equipment are at increased risk of poor mental health which may impair their ability to carry out their role safely. Robust support processes should be put in place to mitigate this risk.

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**Table 1.** Distribution of socio-demographic factors and poor equipment

Characteristic	Population, <i>n</i> (%) <i>N</i> = 3435	Poor equipment, <i>n</i> (%) <i>N</i> = 523 (15%)	$\chi^2$ , <i>df</i> , <i>P</i>
Operation			
Iraq	611 (18)	40 (7)	126.97, 2, <i>P</i> < 0.000
Afghan	1431 (42)	156 (11)	
Maritime	1393 (41)	327 (24)	
Service background			
RN	1299 (38)	290 (2)	120.85, 3, <i>P</i> < 0.000
Army	1808 (53)	173 (10)	
RM	139 (4)	40 (29)	
RAF	171 (5)	13 (8)	
Rank			
Officer	439 (13)	54 (12)	19.96, 2, <i>P</i> < 0.000
Senior	609 (18)	127 (21)	
Junior	2358 (69)	334 (14)	
Age at time of sampling (years)			
18–24	1264 (3)	183 (15)	1.44, 2, <i>P</i> < 0.488
25–39	1805 (53)	288 (16)	
40 and over	348 (10)	51 (15)	
Deployment status			
Formed unit	2746 (82)	475 (17)	40.51, 1, <i>P</i> < 0.00
Individual Augmentee	601 (18)	41 (7)	
Sex			
Male	3021 (89)	475 (16)	3.94, 1, <i>P</i> < 0.047
Female	381 (11)	45 (12)	
Previous deployment			
First tour	727 (21)	72 (10)	20.19, 1, <i>P</i> < 0.000
Previous tours	2704 (78)	451 (17)	
General health			
Good to excellent	3022 (88)	409 (14)	61.78, 1, <i>P</i> < 0.001
Fair to poor	398 (12)	114 (29)	
Self-reported emotional problems			
No	2298 (67)	286 (12)	45.88, 1, <i>P</i> < 0.001
Yes	1111 (33)	235 (21)	
CMD caseness			
No	2467 (72)	276 (11)	116.69, 1, <i>P</i> < 0.001
Yes	938 (27)	245 (26)	
Probable PTSD caseness			
No	3239 (95)	463 (14)	54.74, 1, <i>P</i> < 0.001
Yes	167 (5)	59 (36)	

### Competing interests

A.S. is a serving regular member of the British Army and is seconded to King's College London. N.G. is the Royal College of Psychiatrists lead for Military and Veterans Health and trustee with two military charities.

N.T.F. is part-funded by the United Kingdom's Ministry of Defence, sits on the Independent Group Advising on the Release of Data at NHS Digital and is also a trustee of two military-related charities. Neither A.S., N.G., or N.T.F. was directed by their respected organizations in the publication of research findings.

**Table 2.** Health factors associated with having poor equipment

Characteristic	OR (95% CI) P-value	AOR <sup>a</sup> (95% CI) P-value	AOR <sup>b</sup> (95% CI) P-value	AOR <sup>c</sup> (95% CI) P-value
<b>General health</b>				
Good to excellent	1	1	1	1
Fair to poor	2.56 (2.01–3.26) P < 0.001	2.03 (1.58–2.61) P < 0.001	2.62 (2.05–3.35) P < 0.001	2.09 (1.62–2.70) P < 0.001
<b>Self-reported emotional problems</b>				
No	1	1	1	1
Yes	1.92 (1.58–2.32) P < 0.001	1.64 (1.35–1.99) P < 0.001	1.99 (1.64–2.41) P < 0.001	1.69 (1.38–2.06) P < 0.001
<b>CMD</b>				
No	1	1	1	1
Caseness	2.81 (2.32–3.40) P < 0.001	2.40 (1.96–2.94) P < 0.001	2.92 (2.40–3.55) P < 0.001	2.49 (2.03–3.06) P < 0.001
<b>Probable PTSD</b>				
No	1	1	1	1
Caseness	3.31 (2.37–4.61) P < 0.001	2.81 (1.99–3.97) P < 0.001	3.55 (2.53–4.97) P < 0.001	2.99 (2.11–4.24) P < 0.001

AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; PTSD, post-traumatic stress disorder.

<sup>a</sup>Adjusted for operational environment, whether an Individual Augmentee and whether first tour.

<sup>b</sup>Adjusted for rank and sex.

<sup>c</sup>Adjusted for all above.

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