



ELSEVIER

Contents lists available at ScienceDirect

European Psychiatry

journal homepage: <http://www.europsy-journal.com>

Original article

Forward psychiatry – early intervention for mental health problems among UK armed forces in Afghanistan

N. Jones^{a,*}, N.T. Fear^a, S. Wessely^b, G. Thandi^a, N. Greenberg^a^aAcademic Department of Military Mental Health, Academic Department of Psychological Medicine, Institute of Psychiatry, Weston Education Centre, Cutcombe Road, London SE5 9RJ, United Kingdom^bKing's Centre for Military Health Research, Academic Department of Psychological Medicine, Institute of Psychiatry, Weston Education Centre, Cutcombe Road, London SE5 9RJ, United Kingdom

ARTICLE INFO

Article history:

Received 29 March 2016

Received in revised form 12 May 2016

Accepted 16 May 2016

Available online

Keywords:

Military

United Kingdom

Forward psychiatry

Deployment

Occupational

ABSTRACT

Background: This observational study examined return to duty (RTD) rates following receipt of early mental health interventions delivered by deployed mental health practitioners.

Method: In-depth clinical interviews were conducted among 975 UK military personnel referred for mental health assessment whilst deployed in Afghanistan. Socio-demographic, military, operational, clinical and therapy outcomes were recorded in an electronic health record database. Rates and predictors of EVAC were the main outcomes examined using adjusted binary logistic regression analyses.

Results: Overall 74.8% ($n = 729$) of personnel RTD on completion of care. Of those that underwent evacuation home ($n = 246$), 69.1% ($n = 170$) returned by aeromedical evacuation; the remainder returned home using routine air transport. Predictors of evacuation included; inability to adjust to the operational environment, family psychiatric history, previously experiencing trauma and thinking about or carrying out acts of deliberate self-harm.

Conclusion: Deployed mental health practitioners helped to facilitate RTD for three quarters of mental health casualties who consulted with them during deployment; psychological rather than combat-related factors predicted evacuation home.

© 2016 Elsevier Masson SAS. All rights reserved.

1. Introduction

1.1 Deployed United Kingdom Armed Forces (UK AF) personnel are supported by field mental health teams (FMHTs), which are composed of mental health practitioners drawn from a number of disciplines, typically consisting of military community mental health nurses (CMHNs) and psychiatrists. Within the UK, uniformed CMHNs work in community mental health teams delivering psychological care to non-deployed service personnel. In preparation for deployment, CMHNs acquire a number of competencies, including being able to deliver a range of evidence based therapies such as trauma focused cognitive and behaviour therapy (TF-CBT) and eye movement desensitization and reprocessing (EMDR) therapy [1]. In addition, the FMHT conducts psychoeducation for newly deployed personnel to promote good

self-management, encourage peer support and to raise awareness of mental health matters for at-risk groups. Further to military personnel, the FMHT also serves civilian contractors and other deployed civilians. FMHT staff can include both regular and reserve personnel. Although the size of the deployed team varies, it is organized around a core of five nurses and one psychiatrist to provide support at brigade strength (around 6000 personnel) [2]. During the period of study in Afghanistan, the number of CMHNs varied between two and three per phase of operational deployment (approximately six months duration) and the psychiatrist undertook frequent short visits to Afghanistan. This was supplemented by remote access to supervision and advice from non-deployed psychiatrists, psychologists and other mental healthcare specialists at home in the UK. Although, the care delivered by the FMHT primarily aims to limit attrition arising from deployment, including from traumatic exposures, FMHT personnel organise their care around early intervention [3] using the doctrine of 'forward psychiatry' [4] both of which are guided by the principles of PIES [5]. Within the PIES concept, Proximity

* Corresponding author. Tel.: +44 2078 485 428.
E-mail address: norman.jones@kcl.ac.uk (N. Jones).

denotes conducting management close to the battle area, Immediacy refers to early active management, Expectancy to inculcating the anticipation of recovery and Simplicity refers to the use of brief, uncomplicated intervention(s). Evidence suggests that receipt of early intervention while remaining employed may help to mitigate the risk of developing chronic mental health conditions that may affect long-term employability [6]. Furthermore, early treatment for military personnel is important as recent studies suggest that there is often substantial delay in accessing treatment for mental health conditions following deployment [7] and that help-seeking behaviour is generally poor among UK military personnel [8].

A number of studies have examined the outcome of mental healthcare among UK AF personnel managed by military mental health practitioners in the home base [9–11] and among international forces during combat operations [12–15] often using occupational markers as an index of success, such as returning to duty or ability to work. A previous deployment mental healthcare study conducted among UK AF personnel deployed in Iraq reported a return to duty rate of 71.6%, although a quarter of those treated subsequently underwent unplanned or premature discharge from military service [16].

The current study sought to further the understanding of deployment mental healthcare by examining return to duty (RTD) and evacuation (EVAC) rates following receipt of early mental health intervention delivered by an embedded mental health team supporting deployed UK military personnel in Afghanistan. It was hypothesised that the FMHT deployed to Afghanistan would enable a similar proportion of personnel to RTD as demonstrated previously in Iraq (~72.0%). A secondary objective was to identify and describe the risk factors significantly related to evacuation.

2. Method

FMHT practitioners received referrals from a variety of sources including deployed medical officers, welfare officers, chaplains, operational commanders and self-referrals. Mental health assessments consisted of an in-depth clinical interview, which followed a common pre-determined framework. Given the austerity or remoteness of many locations, additional psychometric measures were not obtained; rather, practitioners relied upon face-to-face assessment. Self-reported psychological symptoms were classified post-interview using the International Classification of Diseases 10th edition guidelines [17]. Following the assessment, interview outcomes were recorded in a health record database specifically created a priori to capture a pre-determined set of clinical factors, many of which have an empirical association with mental health; these included socio-demographic and military characteristics. Psychological factors encompassed perceived combat exposure [18], previous trauma exposure [19], having one or more parents or siblings who have received mental healthcare, designated 'family mental health condition history' [20] and previous psychiatric contact [21,22]. Operational factors included inability to adjust to being deployed, experiencing interpersonal problems with one's operational commander and having to deal with family members who were experiencing problems at home. Mental health factors included past [23] and current episodes of deliberate self-harm (DSH) and current thoughts of DSH [24]. Following completion of therapy, FMHT members recorded the number of therapy sessions delivered and whether RTD or EVAC occurred. The RTD outcome occurred when the mental health casualty was discharged from mental healthcare back to their deployed unit and did not come to the attention of the FMHT for the remainder of the tour; EVAC occurred when the FMHT arranged for the casualty to board a flight home. Database items were either recorded using descriptive labels or endorsed 'present' or 'absent'; the latter categories were

allocated scores of 1 and 0 respectively for the purpose of further analyses. The study sample consisted of all the members of the three UK AF components (Royal Navy (including Royal Marines), Army and Royal Air Force) referred for mental health assessment while deployed mainly in Helmand Province, but also elsewhere in Afghanistan between 2006 and 2013.

2.1. Mental health condition categories and therapy

Deployed mental health practitioners used material gathered during the clinical assessment to determine whether presenting symptoms were related to recent combat or operational exposure. Prior to performing the analyses, three broad meta-categories were created to encompass the diagnostic categories recorded in the clinical database:

- mental health conditions related to combat or operational exposure, which combined combat stress reaction, PTSD and adjustment disorder related to combat experiences;
- mental health conditions unrelated to combat, which included adjustment disorder, anxiety disorder, non-combat-related acute stress reaction, mood disorder, neurotic spectrum disorder, psychosis and problematic behavioural traits;
- the final meta-category encompassed personnel who were assessed as having no mental health condition.

The latter represents a valid comparative category as the service person's behaviour generated sufficient concern to trigger a referral for mental health assessment. This category of referral can present a management challenge in the deployed setting as such personnel may be unwilling to RTD and the referring unit may be reluctant to receive them. As a consequence of behavioural disturbance, a proportion of those assessed as having no mental health condition will ultimately be evacuated home. A small number of cases ($n = 5$) of non-comorbid alcohol misuse were included in the no mental health condition category; these were personnel with pre-existing alcohol dependency who deployed and suffered withdrawal. Although therapeutic input was not categorised, the frequency of therapeutic contact was recorded. Therapy was classified as assessment only, assessment plus one follow-up therapy session, assessment plus two to five therapy sessions and assessment plus six or more therapy sessions.

2.2. Operational context

To provide context for the study outcomes, operational morbidity and mortality characteristics of the UK military deployment to Afghanistan during the period of study (May 2006 to July 2013) were determined [25].

Total UK AF personnel deployed	Approximately 130,000
Killed in action or died of wounds	399
Evacuated by air for health reasons	6883
Critically injured	597
Admitted to the field hospital with battle injuries	2146

This study was approved by the Ministry of Defence Research Ethics Committee (MODREC, No 0836/191 dated 03 December 2010).

2.3. Analyses

The Statistics Package for Social Sciences (SPSS—version 21) for Windows was used to screen categorical data for significant

associations with the RTD/EVAC outcome using Pearson's Chi² (χ^2) test. Trends were assessed using Chi² test for linear trend. Statistical significance was defined as $P < 0.05$. Factors that were found to have a significant association with EVAC/RTD were assessed using logistic regression to generate odds ratios (ORs) with 95% confidence intervals (CI); ORs were further adjusted for potential confounders (AOR). Potential confounding factors were selected for their theoretical association with poorer mental health and were entered into the model in three blocks, socio-demographic, operational, psychological and finally together. In the study tables, reported percentages and numbers may not sum to sample and sub-sample totals due to missing data.

3. Results

The clinical records of 1056 individuals referred to the FMHT in Afghanistan between May 2006 and July 2013 were available. EVAC or RTD status was recorded for 92.3% of referred personnel ($n = 975$). Data non-availability ($n = 81$) was related to incomplete therapy at the time of data extraction or treatment dropout where the RTD or EVAC outcome was unknown; these records were not included in the analyses. Overall 74.8% ($n = 729$) of FMHT attendees successfully returned to duty following consultation with the FMHT. Of those that underwent EVAC ($n = 246$), 69.1% ($n = 170$) were returned home by aeromedical evacuation and 30.9% ($n = 76$) returned home through a welfare pathway using routine air transport.

Table 1
Mental health casualties – socio-demographic and military characteristics.

Demographic characteristic	<i>n</i> (%)	EVAC <i>n</i> (%)	RTD <i>n</i> (%)	<i>P</i> [*]
Age group (in years) (<i>n</i> = 967)				
18–24	445 (46.0)	98 (22.0)	347 (78.0)	< 0.05
25–29	236 (24.4)	147 (28.2)	375 (71.8)	
30–34	141 (14.6)			
≥ 35	145 (15.0)			
Role ^a (<i>n</i> = 975)				
Combat	419 (43.0)	105 (25.1)	314 (74.9)	0.79
Combat support arm	223 (22.9)	60 (26.9)	163 (73.1)	
Combat service support arm	333 (34.2)	81 (24.3)	252 (75.7)	
Service (<i>n</i> = 975)				
Royal Navy	32 (3.3)	12 (37.5)	20 (62.5)	0.09
Royal Marine	52 (5.3)	7 (13.5)	45 (86.5)	
Army	819 (84.0)	209 (25.5)	610 (74.5)	
Royal Air Force	72 (7.4)	18 (25.0)	54 (75.0)	
Sex (<i>n</i> = 975)				
Male	871 (89.3)	222 (25.5)	649 (74.5)	0.60
Female	104 (10.7)	24 (23.1)	80 (76.9)	
Rank groups (<i>n</i> = 975)				
Commissioned officer	43 (4.4)	9 (20.9)	34 (79.1)	0.15
Senior non-commissioned officer	112 (11.5)	37 (33.0)	75 (67.0)	
Junior non-commissioned officer	340 (34.9)	89 (26.2)	251 (73.8)	
Private soldier or equivalent	480 (49.2)	111 (23.1)	369 (76.9)	
Relationship status (<i>n</i> = 971)				
In a long-term relationship	316 (32.5)	86 (27.2)	230 (72.8)	0.32
Not in a long-term relationship	655 (67.5)	159 (24.3)	496 (75.7)	
FU vs. IA personnel (<i>n</i> = 975)				
Formed unit (FU) personnel ^b	697 (71.5)	176 (25.3)	521 (74.7)	0.98
Individual augmentee (IA) Personnel ^c	278 (28.5)	70 (25.2)	208 (74.8)	
Dependent children (<i>n</i> = 909)				
None	497 (54.7)	123 (24.7)	374 (75.3)	0.80
One or more	412 (45.3)	105 (25.5)	307 (74.5)	
Previous deployment (<i>n</i> = 955)				
None	374 (39.2)	82 (21.9)	292 (78.1)	0.07
One or more	581 (60.8)	158 (27.2)	423 (72.8)	
Service length (<i>n</i> = 955)				
< 4 years	438 (45.9)	107 (24.4)	331 (75.6)	0.55
≥ 4 years	517 (54.1)	135 (26.1)	382 (73.9)	
Time deployed (<i>n</i> = 975)				
0–14 weeks	675 (67.4)	174 (26.5)	483 (73.5)	0.20
15 weeks or more	318 (32.6)	72 (22.6)	246 (77.4)	

Percentages are calculated without missing data.

^a RAF and RN personnel classified as combat, combat support or combat service support using the deployed parent unit role.

^b Deployed with peers or regular unit members.

^c Deployed alone or as a reinforcement with few peers.

^{*} Pearson's Chi² (χ^2) test.

3.1. Socio-demographic factors and RTD

UK AF personnel consulting with the FMHT were predominantly males (89.3%), under the age of 30 years (70.4%); 65.9% had a support rather than a combat role and 84.0% were serving in the Army.

A number of socio-demographic and military characteristics were screened using Pearson's Chi² tests for their association with RTD or EVAC. Service background, age, combat role, sex, rank, deploying as a unit individual augmentee, relationship status, having dependent children, previous deployment, service length and time spent deployed were not significantly associated with the RTD/EVAC outcome; only older age (more than 24 years of age) was significantly associated with a reduced likelihood of returning to the deployed unit ($P < 0.05$) (Table 1).

3.2. Mental health condition categories

Mental health conditions related to combat accounted for 25.9% ($n = 252$) of FMHT cases, mental health conditions unrelated to combat accounted for 45.1% ($n = 439$) and 29.1% ($n = 283$) of those assessed were not assigned a diagnosis (including five cases of non-co-morbid alcohol misuse). The RTD rate was highest among those who were assessed as having no mental health condition (85.5%, $n = 212$). In total, 75.4% ($n = 190$) of those with mental health conditions related to combat and 67.4% ($n = 296$) of those assessed as having no mental health condition returned to duty (Table 3). Compared to those assessed as having no mental health condition, both combat-related and non-combat mental health cases had increased adjusted odds of EVAC. Compared to the other categories, non-combat-related mental health cases had the highest EVAC rate (AOR 2.16 95% CI 1.35–3.44). Among those who received a mental health condition diagnosis, greater frequency of therapeutic input was significantly associated with increased adjusted odds of EVAC (AOR 1.69 95% CI 1.14–2.50) with a significant escalating linear trend for EVAC to occur when more frequent therapeutic input was delivered (Chi² for linear trend = 5.81, df: 1, $P < 0.05$) (Table 2).

3.3. Operational and psychological factors

Operational and psychological factors were screened for significant associations with RTD and EVAC using Pearson's Chi²

tests. Operational factors, including experiencing problems with the operational commander and current combat exposure were not significantly associated with EVAC. However, inability to adjust to the operational environment ($P < 0.001$) and having to deal with family members who were experiencing problems at home ($P < 0.01$) were both significantly associated with EVAC. A number of the assessed psychological factors were significantly associated with EVAC. These included: having been previously assessed for mental health problems ($P < 0.05$), having a history of mental health problems in one's family ($P < 0.001$), exposure to trauma prior to the current deployment ($P < 0.001$), self-harming at any time prior to deployment ($P < 0.001$), current episode of self-harm ($P < 0.001$) or threatening to self-harm while deployed ($P < 0.001$).

3.4. Predictors of EVAC; adjusted analyses

In adjusted logistic regression, predictors of EVAC included experiencing difficulty adjusting to the operational environment (AOR 1.73 95% CI 1.27–2.35) reporting a family psychiatric history (AOR 1.93 95% CI 1.29–2.90), previously experiencing trauma (AOR 1.87 95% CI 1.21–2.90), threatening DSH (AOR 5.57 95% CI 3.75–8.28) and carrying out DSH whilst deployed (AOR 8.16 95% CI 4.42–15.08) (Table 3). Being aged 24 years or over was borderline non-significant when adjusted for potential confounders. Previous contact with mental health services, experiencing problems with family at home and previous deliberate self-harm were non-significantly associated with EVAC when adjusted for other psychological factors.

4. Discussion

4.1. Main outcomes

As Jones and Wessely [4] caution in their review, it is essentially unknowable whether or not forward psychiatry really does work as it is difficult to impossible to conduct an unbiased comparison of early intervention in the operational setting, such as a randomised controlled trial. However, this study suggests that the majority of forward psychiatry recipients experience a good outcome. The study outcomes support the primary hypothesis in that 74.8% of FMHT referrals successfully returned to their operational unit following assessment or therapy. The secondary exploration of the

Table 2
Mental health conditions, therapy and evacuation to the home base.

Mental health status ($n=974$)	n (%)	EVAC rate	RTD rate	OR (95% CI)	AOR (95% CI) ^b
No assessed mental health condition ^a	283 (29.1)	41 (14.5)	242 (85.5)	1	1
No assessed mental health condition (28.5%, $n=278$)					
Non-comorbid alcohol misuse (0.5%, $n=5$)					
Mental health condition related to combat or operational exposure	252 (25.9)	62 (24.6)	190 (75.4)	1.92 (1.24–2.98)	3.56 (1.51–8.40)
Combat stress reaction (15.9%, $n=155$)					
Combat related PTSD (2.0%, $n=19$)					
Adjustment disorder related to combat experiences (8.0%, $n=78$)					
Mental health condition unrelated to combat	439 (45.1)	143 (32.6)	296 (67.4)	2.85 (1.94–4.20)	2.16 (1.35–3.44)
Adjustment disorder (14.3%, $n=139$)					
PTSD unrelated to combat (1.2%, $n=12$). Anxiety disorder (8.6%, $n=84$)					
Non-combat-related acute stress reaction (8.6%, $n=84$)					
Mood disorder (8.7%, $n=85$)					
Neurotic spectrum disorder (2.0%, $n=19$)					
Psychosis (0.6%, $n=6$)					
Problematic behavioural traits (1.0%, $n=10$)					
Therapy [Mental health diagnoses only ($n=691$)]					
Assessment only or assessment plus one therapy session	338 (48.9)	87 (25.7)	251 (74.3)	1	1
Assessment plus two or more therapy session	353 (51.1)	118 (33.4)	235 (66.6)	1.45 (1.04–2.01)	1.69 (1.14–2.50)

^a Reference category for OR/AORs and 95% CIs relating to mental health conditions.

^b AOR – adjusted for age, rank, sex, engagement type (regular vs. reserve), relationship status, service length, individual augmentee or formed unit, combat arm, family difficulties at home, combat exposure, difficulty adjusting to operational environment, difficulties with commander, time deployed, previous operational deployment, taken R&R or not, mental health history, family mental health history, current deliberate self-harm threat or act and mental disorder vs. none.

Table 3
Predictors of evacuation to the home base – unadjusted and adjusted odds ratios and 95% confidence intervals.

Category	Factor	EVAC n (%)	RTD n (%)	OR	AOR ^a	AOR ^b	AOR ^c	AOR ^d
Socio-demographic factors	≤24 years of age 500 (51.7)	110 (22.0)	390 (78.0)	1	1	1	1	1
	≥25 years of age 467 (48.3)	135 (28.9)	332 (71.1)	1.44 (1.08–1.93)	1.54 (1.06–2.25)	1.30 (0.93–1.81)	1.41 (1.01–1.99)	1.49 (0.99–2.23)
Operational factors	No difficulty adjusting to the operational environment 542 (56.5)	111 (20.5)	431 (79.5)	1	1	1	1	1
	Difficulty adjusting to the operational environment 418 (43.5)	131 (31.3)	287 (68.7)	1.77 (1.32–2.38)	1.66 (1.23–2.26)	1.83 (1.33–2.52)	1.41 (1.01–1.96)	1.73 (1.27–2.35)
Psychological factors	No difficulty related to family problems at home 723 (75.7)	165 (22.8)	558 (77.2)	1	1	1	1	1
	Difficulty related to family problems at home 232 (24.3)	74 (31.9)	158 (68.1)	1.58 (1.14–2.20)	1.57 (1.13–2.19)	1.57 (1.12–2.21)	1.09 (0.75–1.59)	1.01 (0.65–1.55)
	No previous mental health service assessment or contact 656 (67.3)	146 (22.3)	510 (77.7)	1	1	1	1	1
	Previous mental health service assessment or contact 319 (32.7)	100 (31.3)	219 (68.7)	1.60 (1.18–2.15)	1.53 (1.11–2.11)	1.39 (1.01–1.91)	1.23 (0.87–1.73)	1.06 (0.73–1.55)
	No family mental health disorder history 733 (79.9)	153 (20.9)	580 (79.1)	1	1	1	1	1
	Family mental health disorder history 184 (20.1)	72 (39.1)	112 (60.9)	2.44 (1.73–3.44)	2.32 (1.62–3.33)	2.39 (1.60–3.27)	1.93 (1.32–2.81)	1.93 (1.29–2.90)
	No previous traumatic exposure 784 (80.4)	177 (22.6)	607 (77.4)	1	1	1	1	1
	Previous traumatic exposure 191 (19.6)	69 (36.1)	122 (63.9)	1.94 (1.38–2.72)	1.81 (1.26–2.59)	2.10 (1.45–3.02)	1.87 (1.25–2.78)	1.87 (1.21–2.90)
	No previous deliberate self-harm 827 (86.2)	184 (22.2)	643 (77.8)	1	1	1	1	1
	Previous deliberate self-harm 132 (13.8)	57 (43.2)	75 (56.8)	2.66 (1.81–3.89)	2.59 (1.74–3.84)	2.47 (1.66–3.66)	1.36 (0.86–2.17)	1.36 (0.84–2.23)
	No current DSH thoughts 757 (78.4)	134 (17.7)	623 (82.3)	1	1	1	1	1
	Current DSH thoughts 208 (21.6)	109 (52.4)	99 (47.6)	5.12 (3.68–7.12)	5.49 (3.88–7.78)	5.29 (3.72–7.54)	4.82 (3.38–6.86)^e	5.57 (3.75–8.28)^e
No current DSH Act 902 (93.4)	199 (22.1)	703 (77.9)	1	1	1	1	1	
Current DSH Act 64 (6.6)	44 (68.8)	20 (31.3)	7.77 (4.48–13.49)	7.77 (4.50–13.89)	8.07 (4.56–14.29)	7.73 (4.31–13.88)^e	8.16 (4.42–15.08)^e	

^a Socio-demographic block – adjusted for age, rank, sex, engagement type (regular vs. reserve), relationship status, service length, individual augmentee or formed unit, combat arm & family difficulties at home.

^b Operational block – adjusted for combat exposure, difficulty adjusting to operational environment, difficulties with commander, time deployed, previous operational deployment, taken R&R or not.

^c Psychological factors block – adjusted for mental health history, family mental health history, current deliberate self-harm threat or act and mental disorder vs. none.

^d Adjusted for all factors.

^e Not adjusted for DSH threat or act.

data revealed a number of significant predictors of evacuation home. Evacuation was significantly more likely to occur when FMHT attendees reported a range of psychological factors, such as family mental health condition history, previous traumatic experiences, deliberate self-harm acts or thoughts or experiencing difficulty adjusting to deployment. Having a mental health condition and receiving greater therapeutic input were significant predictors of evacuation.

4.2. Strengths and limitations

Although the lack of validated measures, effects of practitioner subjectivity, varying experience and levels of training may have affected the outcomes of our study, diagnostic categories were mostly provided by experienced military mental health practitioners specifically trained to deliver deployment mental healthcare or by closely supervised junior staff. An alternative approach would have been to use questionnaire-based measures, which may have been more rigorous. Interview based assessments have some advantages as studies that use self-report mental health questionnaires cannot be directly compared to clinical interviews [26] as the former approach can overestimate the prevalence of mental health conditions. Unfortunately, measures of illness severity, which may have affected the results, were not available, the cut-offs for determining whether a factor was present or absent were subjective and somewhat arbitrary and in an operational context, it was impossible to generate a control group. It is possible that personnel with more severe symptoms may have been evacuated more readily and factors, such as peer pressure, sense of duty, availability of social support and unit environment may have mediated the EVAC or RTD outcome. These were not measured. Although mental health outcomes on completion of therapy were not measured in this study, return to duty is an important outcome within an organisation that relies heavily upon full unit strength to be operationally effective.

4.3. Context

Although concerns have been raised about the adverse mental health effects of recent counter-insurgency operations [27], we found evidence of a high degree of mental robustness. FMHT referrals represented around 0.4% of the UK force deployed over the period of study ($n \sim 300,000$); this is similar to the proportion of the deployed UK force who were killed in action, died of wounds or were critically injured during the same assessment period ($n = 996$). Studies of non-UK national military forces suggest that the rate of medical evacuation from deployment can be substantial [28] and often results in poorer long-term mental health [29] irrespective of whether it is undertaken for physical or mental health reasons [30]. Over the current study period, personnel who underwent aeromedical evacuation on mental health grounds ($n = 170$) constituted 2.5% of the total number of medical evacuations ($n = 6883$), representing 0.06% of the total force deployed over the assessment period; in contrast, the proportion of the whole force that underwent aeromedical evacuation for non-mental health reasons was 5.2%. This suggests that overall, the mental health of UK AF personnel remained robust in the face of considerable adversity and that aeromedical evacuation for mental health reasons was undertaken among relatively small numbers of personnel. Given that studies suggest that mental health can be poor among those evacuated from deployment by air, the focus upon RTD among FMHT attendees may represent an important preventative strategy.

When FMHT attendees experienced difficulty adjusting to the operational environment, FMHT healthcare was more likely to result in EVAC. Further research examining ways of smoothing the

transition into deployment life could potentially lead to improved prospects of completing deployment without recourse to mental health support. Personnel who visibly struggle to settle into deployment life may well benefit from more intensive management by their senior NCOs and officers who have a critical role to play in sustaining mental health [31]. Although non-significant when adjusted for confounders, there was some evidence that problems among family members occurring while the service person was deployed may have affected the deployed person's mental health. Assessing family fitness prior to deployment and better support for family members [32] during deployment might well help to improve mental fitness among those who are susceptible to becoming a mental health casualty and may well help them to settle into deployment.

The highest EVAC rates, (32.6%), were found among those with mental health conditions unrelated to combat. Compared to those where a mental health condition was deemed to be absent, the EVAC rate was significantly higher for combat-related conditions and higher still for non-combat-related conditions. Furthermore, greater frequency of therapeutic input did not appear to reduce the EVAC rate. This is unsurprising as it is likely that those with more severe problems received more therapy. While continuing to develop UK deployment mental health doctrine to support combat-related mental health casualties, efforts should be made to develop forward psychiatry techniques specifically for the management of general mental health conditions. One focus of such a strategy could be to identify means of supporting those with histories of previous traumatic exposure, familial mental health conditions and in particular, those who experience thoughts of self-harm or who carry out self-injurious acts. Although the proportion of those experiencing DSH thoughts was 21.0% and 6.6% for DSH acts, in the context of the total number of military personnel deployed over the study period, DSH thoughts and acts were relatively rare, constituting 0.07% and 0.02% of the deployed force, respectively. In this context, it could be in the best interest of both the individual and the force more generally to undertake evacuation home as this would not represent a significant loss of fighting power and may well facilitate an optimal health and occupational outcome. However, the management of DSH during deployment should be carefully considered; while there is a need to mitigate the risk of DSH in an environment where access to live weapons is easy, removal from the operational area may lead to poorer long-term outcome by reducing access to peer social support and promoting isolation.

5. Conclusion

The results of this study suggest that deployed mental health practitioners facilitated a return to the deployed operational unit for around three quarters of personnel who consulted with them in Afghanistan. In this study, psychological rather than combat-related factors predicted evacuation home, which opens up an avenue for early intervention and preventative activities, particularly among those with known risk factors, such as previous experience of trauma and substantial family mental health condition histories. Resilience training and low-level mental health intervention might help at-risk personnel to complete their period of operational deployment. The most important predictors of evacuation were the presence of thoughts about or acts of self-harm. Whilst evacuation may be unavoidable in these circumstances, it is suggested that military medical planners should consider developing DSH management protocols to help FMHT staff to manage the risk of future self-harm in the operational setting given the potential for poor occupational outcomes arising from evacuation.

Funding source

The UK Ministry of Defence funded this study.

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Disclosure of interest

Norman Jones is a serving member of the British Army. Nicola Fear, Gursimran Thandi and Neil Greenberg are researchers employed under the terms of a contract by the UK Ministry of Defence. Sir Simon Wessely is the Director of the King's Centre for Military Health Research, who receives funding from the Ministry of Defence. No direction was taken from the funding agency in the delivery of the research project and the presentation of the study outcomes.

Acknowledgement

We are grateful to the men and women of the UK Armed Forces who contributed data to this study.

References

- [1] UK National Institute for Health and Clinical Excellence (NICE) Guidelines National Institute for Health and Clinical Excellence; 2005. <http://www.nice.org.uk/Guidance/CG26>.
- [2] Greenberg N, Browne T, Langston V, McAllister P. Operational mental health: a users guide for medical staff. *J R Naval Med Serv* 2007;93(1):5.
- [3] Kearns MC, Ressler KJ, Zatzick D, Rothbaum BO. Early interventions for PTSD: a review. *Depression Anxiety* 2012;29(10):833–42.
- [4] Jones E, Wessely S. Forward psychiatry in the military: its origins and effectiveness. *J Trauma Stress* 2003;16(4):411–9.
- [5] Jones E, Thomas A, Ironside S. Shell shock: an outcome study of a First World War 'PIE' unit. *Psychol Med* 2007;37(2):215–24.
- [6] Dell'Osso B, Glick ID, Baldwin DS, Altamura AC. Can long-term outcomes be improved by shortening the duration of untreated illness in psychiatric disorders? A conceptual framework. *Psychopathology* 2012;46(1):14–21.
- [7] Maguen S, Madden E, Cohen BE, Bertenthal D, Seal KH. Time to treatment among veterans of conflicts in Iraq and Afghanistan with psychiatric diagnoses. *Psychiatric Serv* 2014;63(12):1206–12.
- [8] Iversen A, van Staden L, Hughes J, Browne T, Hull L, Hall J, et al. The prevalence of common mental disorders and PTSD in the UK military: using data from a clinical interview-based study. *BMC Psychiatry* 2009;9(1):68. <http://dx.doi.org/10.1186/1471-244X-9-68>.
- [9] Gould M, Sharpley J, Greenberg N. Patient characteristics and clinical activities at a British military department of community mental health. *Psychiatr Bull* 2008;32(3):99–102.
- [10] Jones N, Wink P, Brown RA, Berrethloth D, Abson E, Doyle J, et al. A clinical follow-up study of reserve forces personnel treated for mental health problems following demobilisation. *J Mental Health* 2011;20(2):136–45.
- [11] Turner MA, Kiernan MD, McKechnie AG, Finch PJC, McManus FB, Neal LA. Acute military psychiatric casualties from the war in Iraq. *Br J Psychiatry* 2005;186:476–9.
- [12] Schmitz KJ, Schmied EA, Webb-Murphy JA, Hammer PS, Larson GE, Conway TL, et al. Psychiatric diagnoses and treatment of US military personnel while deployed to Iraq. *Mil Med* 2012;177(4):380–9.
- [13] Garber BG, Zamorski MA, Jetly R. Mental health of Canadian Forces members while on deployment to Afghanistan. *Can J Psychiatr* 2012;57(12):736–44.
- [14] Scott JN. Diagnosis and outcome of psychiatric referrals to the field mental health team, 202 field hospital, Op telic 1. *J R Army Medical Corps* 2005; 151:95–100.
- [15] McAllister PD, Blair SPR, Philpott S. Op telic-A field mental health team in the general support medical setting. *J R Army Medical Corps* 2004;150:107–12.
- [16] Jones N, Fear NT, Jones M, Wessely S, Greenberg N. Long-term military work outcomes in soldiers who become mental health casualties when deployed on operations. *Psychiatry* 2010;73(4):352–64.
- [17] World Health Organization. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva: World Health Organization; 1992.
- [18] Prigerson HG, Maciejewski PK, Rosenheck RA. Population attributable fractions of psychiatric disorders and behavioral outcomes associated with combat exposure among US men. *Am J Public Health* 2002;92(1):59–63.
- [19] Breslau N, Chilcoat HD, Kessler RC, Davis GC. Previous exposure to trauma and PTSD effects of subsequent trauma: results from the Detroit Area Survey of Trauma. *Am J Psychiatry* 1999;156(6):902–7.
- [20] Dean K, Stevens H, Mortensen PB, Murray RM, Walsh E, Pedersen CB. Full spectrum of psychiatric outcomes among offspring with parental history of mental disorder. *Arch Gen Psychiatry* 2010;67(8):822–9.
- [21] Larson GE, Hammer PS, Conway TL, Schmied EA, Galarneau MR, Konoske P, et al. Pre-deployment and in-theater diagnoses of American military personnel serving in Iraq. *Psychiatr Serv* 2011;62(1):15–21.
- [22] LeardMann CA, Smith TC, Smith B, Wells TS, Ryan MA. Baseline self-reported functional health and vulnerability to post-traumatic stress disorder after combat deployment: prospective US military cohort study. *Br Med J* 2009;338:b1273.
- [23] Hawton K, Harriss L, Casey D, Simkin S, Harrison K, Bray I, et al. Self-harm in UK armed forces personnel: descriptive and case-control study of general hospital presentations. *Br J Psychiatry* 2009;194(3):266–72.
- [24] Hawton K, Saunders K, Topiwala A, Haw C. Psychiatric disorders in patients presenting to hospital following self-harm: a systematic review. *J Affect Disord* 2013;151(3):821–30.
- [25] <https://www.gov.uk/government/statistics/op-herrick-casualty-and-fatality-tables-released-in-2014>.
- [26] Eaton WW, Neufeld K, Chen LS, Cai G. A comparison of self-report and clinical diagnostic interviews for depression: diagnostic interview schedule and schedules for clinical assessment in neuropsychiatry in the Baltimore epidemiologic catchment area follow-up. *Arch Gen Psychiatry* 2000;57(3): 217–22.
- [27] Applewhite L, Keller N, Borah A. Mental health care use by soldiers conducting counter-insurgency operations. *Mil Med* 2012;177(5):501–6.
- [28] Cohen SP, Brown C, Kurihara C, Plunkett A, Nguyen C, Strassels SA. Diagnoses and factors associated with medical evacuation and return to duty for service members participating in Operation Iraqi Freedom or Operation Enduring Freedom: a prospective cohort study. *Lancet* 2010;375:301–9.
- [29] Harman DR, Hooper TI, Gackstetter GD. Aeromedical evacuations from Operation Iraqi Freedom: a descriptive study. *Mil Med* 2005;170(6):521–7.
- [30] Forbes H, Jones N, Woodhead C, Greenberg N, Harrison K, White S, et al. What are the effects of having an illness or injury whilst deployed on post deployment mental health? A population based record linkage study of UK Army personnel who have served in Iraq or Afghanistan. *BMC Psychiatry* 2012;12(1):178. <http://dx.doi.org/10.1186/1471-244X-12-178>.
- [31] Jones N, Seddon R, Fear NT, McAllister P, Wessely S, Greenberg N. Leadership, cohesion, morale, and the mental health of UK Armed Forces in Afghanistan. *Psychiatry* 2012;75(1):49–59.
- [32] Mulligan K, Jones N, Davies M, McAllister P, Fear NT, Wessely S, et al. Effects of home on the mental health of British forces serving in Iraq and Afghanistan. *Br J Psychiatry* 2012;1–6. <http://dx.doi.org/10.1192/bjp.bp.111.097527>.