What happens to the mental health of UK service personnel after they return home from Afghanistan?

Elizabeth Banwell,1 N Greenberg,2 P Smith,1 N Jones,2 M Fertout2

ABSTRACT

Objective  Fear et al identified a small but significant increase in probable post-traumatic stress disorder (PTSD) in UK military personnel from around 3% in first year post deployment to around 6% by year 5. As yet it is not clear what factors are linked to the increase in probable PTSD, and therefore, serial measurement of poor mental health would be helpful.

Method  Rates of mental ill health among UK service personnel were compared upon deployment completion and at follow-up and identified factors associated with maladjustment.

Results  Poor mental health symptomatology increased from baseline to follow-up, PTSD symptoms and related functional impairment increased significantly. Poor baseline mental health was predictive of transition and family relationship difficulties.

Conclusions  The results are discussed in relation to encouraging recognition and reporting of symptoms among personnel and their social networks.

INTRODUCTION

Exposure to traumatic incidents, commonplace in combat zones, increases the risk of developing post-traumatic stress disorder (PTSD), depression and anxiety.1 However, the risk of developing mental illness appears to vary between troops,2–3 PTSD rates for UK combat personnel vary from 2.7% to 7%, whereas in US studies, rates are generally higher, for example, 13.8%,4 and can increase over follow-up.5 Fear et al found a modest increase in PTSD over follow-up, but lower than US figures. The findings may differ as more US troops proportionately came under artillery, rocket or mortar attack and served longer deployments (average 12 months vs 6 months for UK).4 Within the UK military, common mental disorders (CMDs), such as anxiety and depression, are more prevalent than PTSD; ranging from 17.1% to 27.2%.6 These rates are broadly comparable with similar cohorts of the general UK population.6

Research identified that poor spouse and family relationships and difficulty resuming roles were associated with poorer transition when returning home from deployment to a non-combat environment.7 Lack of perceived social support is related to higher rates of PTSD and CMD.8 Self-report measures are useful due to the mobile nature of this population; however, scores can only indicate probable caseness due to the subjective interpretation of measures and potential for demand characteristics, that is, altering one’s responses in line with social norms or perceived desirability.9

Fear et al identified a significant increase in PTSD symptoms over a 3-year to 6-year follow-up and CMD symptoms are generally higher than PTSD, thus identifying both symptom clusters is necessary.6 Identifying the modifying factors and most predictive variables relating to transition from an operational to home environment and mental illness symptomatology may help target existing/new post-deployment support.

With this in mind, two research hypotheses were developed:

▸ First, that deployed personnel would show gradual improvement over time following return from deployment, regarding their emotional adjustment over transition and difficulties with family relationships over the research follow-up period.

▸ Second, that baseline symptoms of poor mental health would be predictive of problematic adjustment over transition and difficulties with family relationships over the research follow-up period.

METHOD

All participants were UK, regular or reserve military personnel from all ranks of the Army, Navy, Royal Marines or Royal Air Force, who had completed an operational tour in Afghanistan and were returning to the UK via Third Location Decompression (TLD), held in UK military bases in Cyprus. Decompression is the first stage of the UK military personnel’s gradual adaptation from deployment to the home environment, with the aim of “reducing the potential for maladaptive psychological adjustment”.10 Personnel attend decompression for 24–36 h and participate in psychoeducation and recreational activities.11

Key messages

▸ Rates of probable mental health disorder and functional impairment rose from baseline to follow-up.

▸ Post-deployment functional impairment increased over time and was related to increased probable post-traumatic stress disorder (PTSD) caseness.

▸ Probable PTSD caseness rose significantly post deployment for a proportion of participants.

▸ Greater symptoms of mental health difficulties at baseline predicted more transition and family relationship problems at follow-up.
Participants were recruited by the TLD staff and gave informed consent to complete the baseline questionnaire only or baseline and follow-up questionnaires and comparisons were made between each follow-up group (Figure 1).

Baseline measure descriptions
The baseline questionnaire measured combat exposure and general demographics. Experiences of decompression were also measured to gather data for a parallel study by the Academic Centre for Defence Mental Health (ACDMH) King’s College London. The ACDMH study was single time point, whereas the current study followed up consents from the baseline participants.

Probable PTSD symptoms were measured using the 17-item National Centre for Post-Traumatic Stress Disorder Checklist, civilian version (PCL-C).12 This version was chosen as previous research had used this measure and indicated a cut-off score of 30 for indicating probable PTSD symptoms associated with functional impairment within a military population.13 The General Health Questionnaire (GHQ)-1214 is a well-validated measure, using a cut-off score of >4 to identify psychiatric disturbance.6 The two-item General Anxiety Disorder (GAD-2) scale15 assesses core anxiety symptoms using two GAD-7 items; sensitivity and specificity values are 0.95 and 0.64, respectively (95% CI).16 The two-item Patient Health Questionnaire (PHQ-2) is a brief measure of depression, with sensitivity and specificity values of 0.79 and 0.86, respectively.17

The sleep scale was developed by the ACDMH during the Decompression and the ‘Battlemind’ Study.18 This scale comprised two, four-point Likert scales assessing ‘satisfaction with sleep’ and ‘sleep difficulty’.

Follow-up questionnaire and measures
The follow-up questionnaire was completed on an e-survey software package ‘SelectSurvey.NET’ and took 15–20 min to complete. Follow-up and baseline responses were matched through participant name, date of birth or service number. The PCL-C, GHQ-12 and sleep scale were included at follow-up. The full GAD and PHQ were included to obtain more detailed data. The GAD-716 cut-off scores of 5 (mild), 10 (moderate) and 15 (severe) were used, and the PHQ-9, which scores depression from 5 (mild), 10 (moderate), 15 (moderately severe) and 20 (severe).19

The transition scale18 is an 11-item scale assessing factors impacting transition back to a home environment, post deployment. Response options were ‘agree’ or ‘disagree’ to a range of statements, such as “I’ve found it difficult to get back to my normal activities”; responses were binary coded, with higher totals corresponding to greater transition difficulty.

A functional impairment question was asked after the PCL-C to identify difficulties relating to PTSD symptoms assessed via the PCL-C. This was a five-point Likert scale ranging from ‘no difficulty’ to ‘extreme difficulty’; those responding ‘somewhat’ to ‘extreme’ difficulties were classed as experiencing functional impairment relating to self-reported symptoms of PTSD.

Participants were also asked to rate their relationship with their spouse/partner, regarding whether the relationship had changed after deployment and their satisfaction with the relationship. Additionally, participants rated relationships with their children (where applicable), regarding whether it had been difficult to re-establish a relationship with them post-deployment, and whether they felt that their deployment had had an effect on their children. Responses regarding spouse and child relations were rated separately, on four-point or five-point Likert scales, and included statements such as “it’s [relationship] better now” and “it’s [relationship] stayed the same”; responses were coded to produce a score, greater scores indicating greater difficulty.

Power analysis
To determine sufficient power to detect a small to medium within-group effect size of 0.25 in relation to the first hypothesis, with 80% power (p<0.01, two-tailed), a sample size of 191 was required. We oversampled to account for participant attrition from baseline to follow-up.

Study procedure
At the baseline stage, confidentiality of responses was stressed during recruitment. Questionnaires were completed individually and returned to TLD staff who sent them to the research team (Figure 2). Three site visits were conducted to help increase response rate. Participants and their Chain of Command (line of authority) were assured that follow-up questionnaire completion did not indicate problematic baseline scores. Multiple comparisons were controlled for by lowering the alpha level from 0.05 to 0.01, to reduce the likelihood of a type I error (Figure 3).

RESULTS
Demographics
From 2580 baseline participants, 586 (22.7%) consented to follow-up and half (296) completed follow-up: 156 (52.7%) in the T1 arm and 140 (47.3%) in T2 follow-up—these samples did not differ significantly demographically. Compared with overall United Kingdom Armed Forces (UKAF) demographics, follow-up responders contained proportionately more Royal Air Force and fewer Royal Marine and Navy personnel; junior ranks and younger personnel were under-represented, officer ranks and women were over-represented. There were no significant operational differences between groups, for example, deployment base and exposure to traumatic events.

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**Figure 2** Participant contact flow chart.

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**Non-responder analysis: follow-up completers compared with baseline-only completers**

**Demographic differences**

Significantly more respondents were in higher ranks; female; in a relationship; over 24; had children under 18 years old; had a longer service length; were individual augmentees and reservists. Participants with higher scores on baseline GHQ-12 were borderline significantly more likely to respond to follow-up. See online supplementary material for statistical analyses.

**Functional impairment**

Functional impairment was associated with PTSD symptomatology at follow-up (PCL-C total score ≥30). Participants indicating functional impairment increased from baseline (n=35; 12.6%) to follow-up (n=63; 23%: $χ^2=16.216$, $p=0.000$). The logistic model, to identify significant predictor variables, indicated poor fit; a $χ^2$ test for independence indicated transition difficulty at follow-up and baseline GHQ score were significantly positively associated, $χ^2(1, n=287)=6.599$, $p=0.010$, $ϕ=0.165$.

The model significantly indicated a distinction between those who did and did not report that their spouse relationship had changed, $χ^2(2, N=250)=31.167$, $p=0.000$. Baseline GHQ score was a significant predictor of change in relationship, $p<0.01$, OR 1.473, 95% CI (1.28 to 1.70).

Respondents who did and did not report unhappiness with their spousal relationship were significantly distinguishable, $χ^2(2, N=252)=18.690$, $p=0.000$. Baseline GHQ score was a significant predictor of relationship satisfaction, $p<0.01$, OR 1.466, 95% CI (1.25 to 1.72).

There was no significant distinction between respondents reporting that deployment had or had not affected their children, $χ^2(2, N=153)=4.134$, $p=0.127$.

The model significantly distinguished between those who did or did not report a problem re-establishing a relationship with their children post deployment, $χ^2(4, n=151)=19.973$, $p=0.001$; no predictor variables were uniquely significant, as all $p$ values were $>0.01$.

**DISCUSSION**

This is the first UK study to examine the mental health of troops during the months following return from operational deployment, and there were a number of key findings. Contrary to predictions, rates of probable mental health disorder and functional impairment rose from baseline to follow-up. Post-deployment functional impairment increased over time, which was related to increased probable PTSD caseness, both of

<table>
<thead>
<tr>
<th>Measure</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
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<td>59.00</td>
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<td>6.00</td>
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<td>1.00</td>
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<td>0.31</td>
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GHQ, General Health Questionnaire; PCL-C, National Centre for Post-Traumatic Stress Disorder Checklist, civilian version; PHQ-2, two-item Patient Health Questionnaire.
which rose significantly for a proportion of participants post deployment and worse baseline mental health predicted more transition and family relationship problems at follow-up.

The hypothesis that mental health symptoms would decline over time after return from deployment was not supported as symptoms of poor mental health actually increased for all measures, excluding sleep satisfaction, by follow-up, although only PTSD symptoms increased significantly. The mean difference of three PCL-C scale points is not clinically significant, but the data support the work of Fear et al and US literature, indicating an increase in probable PTSD rates over time. The increase in UK rates of probable PTSD is in spite of the arguably greater operational PTSD risk factors for US troops, which indicates that further surveillance is warranted among UK personnel.

The increased sleep satisfaction may reflect returning to a non-combat environment and more regular shift patterns than the challenging deployment environment. Despite greater sleep satisfaction at follow-up, respondents reported that sleep problems interfered with their daily functioning at this time. This suggests that sleep disturbance in itself is not necessarily indicative of mental health problems; rather, it appears that reports of sleep problems are more important in this regard.

The second hypothesis that baseline symptoms of poor mental health would be predictive of difficulties with adjustment and relationships after returning from deployment was supported, with CMD symptoms being the most significant predictor of such difficulties. These symptoms, such as difficulty concentrating and sleeping, may impact an individual’s adaptation to a non-combat environment due to a change in routine and role. The finding that CMD symptoms, rather than PTSD, were more predictive of transition difficulties is of interest; this may be because during early homecoming those with high levels of PTSD symptoms are keen to avoid talking about them as avoidance is a key element of PTSD.

Transition difficulties were more commonly reported than possible PTSD symptomatology, with the majority expressing other people had not understood what they had been through; this belief may exacerbate CMD symptoms and perpetuate lack of symptom reporting. This supports previous research highlighting the need for greater support for personnel during transition due to the increased risk of mental health difficulties at this time.

**Implications**

Maintaining the good health of the UKAF is important individually and organisationally as continued deployments throughout service reconfigurations mean individuals will be asked to perform to a high standard in testing organisational and political climates.

**Increasing symptom recognition**

Reported rates of possible PTSD increased significantly and anxiety and depression increased non-significantly from baseline to follow-up, which may be accounted in part, by symptoms going unrecognised as signs of poor mental health. The early increase post-deployment symptomatology may precede a formal rise in prevalence of PTSD. To facilitate symptom recognition, further provision of evidence-based psychoeducation after homecoming may be beneficial as personnel may be less distracted and fatigued once in their regular environment in contrast to the decompression brief. This intervention would be supported Mulligan et al., whose post-deployment psychoeducation intervention found a positive effect for decreased alcohol consumption among participants.

Additionally, a peer-delivered programme may provide a more accepted confidante than a mental health professional, with whom the individual may lack shared experience. Trauma Risk Management is a well-researched mechanism for post-traumatic event peer group-led mental health assessment and support and has been shown to reduce stigma and increase help seeking. Peer group ‘case studies’ of previous mental health service users may prove useful during mental health briefings.

**Involvement of support networks and DCMH staff**

The secondary care Department of Community Mental Health (DCMH) teams are staffed by military and civilian psychologists, psychiatrists, mental health nurses and social workers. They provide various services including occupational mental health assessment (to determine whether someone is fit for specific duties) and treatment (National Institute for Health and Care Excellence-approved interventions like Trauma Focused-Cognitive Behavioural Therapy and Eye Movement Desensitisation and Reprocessing). DCMH staff also provide psychoeducational briefings to a range of military personnel, such as troops who have recently returned from deployment.

Involving family members in mental health psychoeducation may facilitate symptom recognition and increase help seeking, as one-fifth of partners of deployed personnel stated seeking help for mental health problems is ‘weak’. Encouragement from family and friends was reported to be the most important factor in overcoming barriers to accessing care, which supports the proposed strategy. In addition to therapy provision, DCMH staff may assist training key Unit personnel in mental illness symptom recognition.

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**Table 2** Within-group differences in mental health scores from baseline to follow-up

<table>
<thead>
<tr>
<th>Mental health measure</th>
<th>Follow-up group number</th>
<th>Z score</th>
<th>Significance (p)</th>
<th>Group size (N)</th>
<th>Effect size (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL-C</td>
<td>T1</td>
<td>5.781</td>
<td>0.000</td>
<td>145</td>
<td>0.480</td>
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<tr>
<td></td>
<td>T2</td>
<td>3.111</td>
<td>0.002</td>
<td>132</td>
<td>0.270</td>
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<tr>
<td>GHQ-12</td>
<td>T1</td>
<td>0.478</td>
<td>0.633</td>
<td>148</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>0.499</td>
<td>0.618</td>
<td>131</td>
<td>–</td>
</tr>
<tr>
<td>PHQ-2</td>
<td>T1</td>
<td>1.404</td>
<td>0.160</td>
<td>145</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>0.689</td>
<td>0.491</td>
<td>130</td>
<td>–</td>
</tr>
<tr>
<td>Sleep dissatisfaction</td>
<td>T1</td>
<td>–4.355</td>
<td>0.000</td>
<td>145</td>
<td>0.361</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>–4.500</td>
<td>0.000</td>
<td>133</td>
<td>0.390</td>
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<tr>
<td>Sleep distress</td>
<td>T1</td>
<td>1.414</td>
<td>0.157</td>
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<tr>
<td></td>
<td>T2</td>
<td>2.828</td>
<td>0.005</td>
<td>63</td>
<td>0.356</td>
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</table>

GHQ, General Health Questionnaire; PCL-C, National Centre for Post-Traumatic Stress Disorder Checklist, civilian version; PHQ-2, two-item Patient Health Questionnaire.
Future research
Further longitudinal research is needed to identify whether increased probable PTSD symptomatology continues over time, and crucially, whether it reaches clinical significance. If so, the need for larger-scale mental health policy change would be indicated. Continued development and evaluation of peer-delivered programmes would aid their clinical effectiveness.

Strengths and limitations
Response rate
Just over half of follow-up consenters completed the survey, which is slightly lower than other UK response rates achieved, and responders were more likely than the overall UKAF to be higher ranks; over 24; female; in a relationship; longer serving personnel; individual augmentees or reserve personnel. As the current sample showed increasing symptomatology, it suggests this is a military-wide pattern and not just limited to more junior ranks and younger personnel as reported in previous research.2

CONCLUSIONS
This research has shown that self-reported symptoms of poor mental health increased from baseline to follow-up following return from deployment. The rise in PTSD symptoms was statistically, but probably not clinically, significant but was associated with increased functional impairment at follow-up in common with other studies. Transition and relationship difficulties at follow-up were predicted by baseline symptoms of poor mental health.

Suggestions are made regarding increasing symptom recognition through psychoeducation and social support from peers and family members throughout transition. However, a lot of work has been conducted regarding how best to provide support for troops returning home and we suggest that future research should also continue to monitor rates of poor mental health over time to better understand where clinically significant changes occur.

Contributors EB designed, completed and wrote up original research from which the current paper is based for doctoral thesis. Also wrote the current article. NG is primary supervisor for doctoral thesis, advised closely on design, completion and writing of original research. Made recommendations for current article. PS is secondary supervisor for doctoral research, advised closely on design, completion and writing of original research. Made recommendations for current article. NJ provided support with statistical analysis for follow-up stage and completed analyses for baseline stage of original research. Advised on statistical write up for current article. MF organised baseline stage data collection, provided support with follow-up data collection and organised data entry for results.

Competing interests None declared.

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Provenance and peer review Not commissioned; externally peer reviewed.

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