

Occupational outcomes in soldiers hospitalized with mental health problems

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Background	Little is known about the longer term occupational outcome in UK military personnel who require hospital-based treatment for mental health problems.
Aims	To examine the documented occupational outcomes following hospital-based treatment for mental health problems within the British Army.
Methods	Hospital admission records were linked to occupational outcome data from a database used for personnel administration.
Results	A total of 384 records were identified that were then linked to occupational outcome after an episode of hospitalization. Seventy-four per cent of those admitted to hospital with mental health problems were discharged from the Army prematurely, and 73% of the discharges occurred in the first year following hospitalization. Discharge from the Army was associated with holding a junior rank, completing <5 years military service, having a combat role, being male and receiving community mental health team treatment prior to admission.
Conclusions	Hospitalization for a mental health problem in a military context is associated with a low rate of retention in service. Outcome was not influenced greatly by duration of hospital stay; however, those who reported receiving individual rather than group-based therapy while in hospital appeared to do better.
Key words	Armed Forces; hospitalization; mental health; occupational outcomes; soldiers; United Kingdom.

Introduction

The Defence Mental Health Services (DMHS) aims to stabilize mental health problems and facilitate a return to full military functioning or to contribute to a seamless transition back to civilian life. The bulk of military mental health care is mainly provided by a number of Departments of Community Mental Health, which equate to civilian community mental health teams. The numbers requiring hospital care for mental health problems as a proportion of the service population are actually quite small (this is discussed later in this paper). Service mental health policy about secondary care states that ‘The approach should be one of recovery and rehabilitation, ensuring that wherever possible Service personnel are returned to duty rapidly, or supported and enabled to

make a smooth, seamless and effective transition back into civilian life’ [1].

Military mental health treatment is organized in a layered fashion incorporating the principles of forward psychiatry, namely proximity, immediacy, expectancy and simplicity [2]. As in civilian practice, the DMHS supports the work of primary care [3] and military mental health care delivery maps on to the influential ‘pathways to care’ model first outlined by Goldberg and Huxley [4]. Using Goldberg and Huxley’s model, this paper looks at the outcome of level five, which represents admission to hospital. In the course of the past 5 years (2004–2009), inpatient mental health care has been provided by an independent sector hospital provider throughout a network of hospitals in the UK.

Little is known about the longer term occupational outcomes of military mental health care. Evidence concerning the mental health care of soldiers deployed during the 2003 Iraq War suggested that the military mental health teams in Iraq saw small numbers of psychiatric casualties [5], and the outcome for those who were medically treated for psychiatric reasons in theatre, as measured by return to duty, was favourable [6]. However, these were brief largely overnight stays in a field hospital

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and not comparable to hospitalization in the usual sense of the word. Other work has described the characteristics of those evacuated from Iraq and returned to the UK but this work did not provide any information on occupational outcomes [7].

Because of the dearth of information regarding long-term occupational consequences of mental health-related hospitalization in soldiers and in order to further inform the fifth level of the pathways to care model, we conducted this study in British soldiers who were admitted to hospital with mental health problems during the period between March 2004 and March 2007.

Methods

Our sample was based on reliable data concerning psychiatric hospital admission that was collected in September 2008; 577 records of Army personnel who had been inpatients in receipt of mental health care were identified. One hundred and ninety-three soldiers had been in hospital <18 months prior to the data collection and were excluded from the analysis as insufficient time had passed for a definitive occupational outcome other than normal completion of the elective service term to be clear. Therefore, 384 records of soldiers who had been discharged from hospital on or before 30 March 2007 were included in the final analysis. To ensure accurate identification, data linkage between the administrative database and the hospital audit database was performed on a combination of identifiers including service number, name, rank and date of birth.

When a soldier is admitted to hospital, a hospital admission data sheet is completed that includes the admission circumstances, basic demographic details and both clinical and preliminary treatment data. The provisional data set is updated and diagnosis revised using discharge information when a soldier leaves hospital. These data are stored electronically and a quarterly report of hospital activity is produced for audit purposes. Data regarding basic demographic, diagnostic and treatment information were extracted for the purposes of these analyses.

A central personnel record system known as Joint Personnel Administration (JPA) is maintained by the UK Armed Forces. JPA contains a wide range of personal data and, for personnel who have left service, has a field detailing the date and details of discharge from the Army. The JPA database was used to determine the current occupational status for the 384 personnel in our sample.

The occupational categories were combined to form two groups: (i) premature discharge from the Army and (ii) remaining in service or completing a full elective term of service. Possible reasons for premature discharge included civilian imprisonment, compulsory discharge, discharge by self-request during the early period of service, discharge as a consequence of a serious disciplinary

breach, enlisting in the Army having not revealed a previous conviction or serious illness, having a temperament or personality unsuited to further military service, requesting discharge at the first option point, medical discharge and death.

Ministry of Defence Research Ethics Committee approval was granted for the publication of this research on 9 May 2009, and the data linkage strategy was approved for a parallel piece of work in May 2008.

To prepare for the analysis, a binary variable was created *a priori* comparing 'neurotic disorders' with non-neurotic problems (Table 1).

Statistical analysis was performed using SPSS v15 for Windows. Odds ratios (ORs) with 95% confidence intervals (95% CI) were calculated to assess the association between the two diagnostic categories and occupational outcome using logistic regression. Potential confounders were controlled for, including the type of treatment delivered while in hospital, rank, combat arm, sex, service length and having received a trial of community treatment prior to admission. Model goodness of fit was tested with the Hosmer–Lemeshow test.

Results

The characteristics of the sample are shown in Table 2. The majority of those admitted to hospital were male, junior ranks, <30 years of age and had served <10 years. Compared to the Army as a whole [8], soldiers admitted to hospital were more likely to hold a junior rank, be <25 years of age and have a combat role.

Table 1. Binary diagnostic categories

Diagnostic category (<i>n</i> = 377 ^a)	Categories	
	Neurotic	Non-neurotic
Anxiety disorder (<i>n</i> = 4)	X	
Adjustment disorder (<i>n</i> = 54)/PTSD (<i>n</i> = 23)/ASD (<i>n</i> = 14)	X	
Mood disorder (<i>n</i> = 141)	X	
Psychotic episode (<i>n</i> = 26)		X
Personality disorder (<i>n</i> = 14)		X
Substance/alcohol misuse (<i>n</i> = 77)		X
Other (<i>n</i> = 14) ^b		
Not suffering from a psychiatric disorder (<i>n</i> = 10) ^c		

^aSubjects with missing diagnostic information (*n* = 7) are not included in the table.

^bAllocated to 'Neurotic' category includes obsessive compulsive disorder, bulimia nervosa, episode of self-harm, mutism and suicidal ideation and 'Non-Neurotic' category includes brain injury, anorexia nervosa, attention deficit and hyperactivity disorder, dissociative motor disorder and persistent motor disorder.

^cNot included in the regression analysis.

Table 2. Socio-demographic characteristics of the sample ($n = 384$) and equivalent data for the Army as at 2009

Characteristics	Sample, n (%)	Army (%) ^a
Sex		
Male	345 (90)	92
Female	39 (10)	8
Rank		
Junior rank	216 (56)	35
Junior non-commissioned officer	89 (23)	25
Senior non-commissioned officer	43 (11)	18
Warrant officer	10 (3)	5
Commissioned officer	26 (7)	17
Age (years) ^b		
<20	49 (13)	9
20–24	122 (32)	23
25–29	76 (20)	21
30–34	54 (14)	15
35–39	51 (13)	17
>39	30 (8)	15
Service arm ($n = 370$) ^c		
Combat arm	150 (41)	33
Combat support arm	75 (20)	28
Combat service support arm	145 (39)	39
Unknown	14	
Service length (years)		
<1	11 (3)	
1–4	112 (29)	
5–9	116 (30)	
10–14	60 (16)	
15–19	36 (9)	
>19	34 (9)	
Unknown	15	

^aDefence Analytical Services and Advice [www.DASA.mod.uk].

^bThe mean age of the study sample was 27.4 years (SD 8.2, range 17–55 years, $n = 384$).

^cwww.armedforces.co.uk.

Table 3 examines the occupational outcomes by certain socio-demographic, military and illness characteristics.

Discharge from service was associated with holding a junior rank, completing <5 years service, having a combat role, being male and having received community mental health team treatment prior to admission.

There was an association between length of service and outcome ($\chi^2 = 66.5$, d.f. = 3 and $P < 0.001$); in the least experienced group (those with <1 year service), no soldiers were returned to long-term military employment. Combat troops had the lowest rates of remaining in service, with only 16% serving on or completing their elected term of service. Personnel were more likely to stay in service if they came from the combat support arm (which includes roles such as engineers, artillery and signals) (29%) or combat service support arm (which includes roles such as medic logistical support and administrative support) (34%). Female personnel had higher rates of re-

maining in service (49%) than male personnel (24%) ($\chi^2 = 11.3$, d.f. = 1 and $P < 0.01$). There was a marginal advantage in outcome for those who were admitted directly to hospital without a trial of community treatment ($\chi^2 = 5.0$, d.f. = 1 and $P < 0.05$). Individuals diagnosed with co-morbid disorders had marginally lower rates of long-term return to work, although this finding did not reach statistical significance. The duration of time that the soldier spent in hospital was not significantly associated with a better occupational outcome.

Table 4 shows the rate of discharge or premature termination from the Army by diagnostic group.

Overall, 26% of the sample were still serving or had completed their elected service term at the time of data collection. Seventy-four per cent had terminated their service prematurely or had been discharged. Seventy-three per cent ($n = 179$) of the discharges occurred in the first year following hospitalization and 27% ($n = 76$) between years 1 and 4. Ten per cent ($n = 27$) of the soldiers had signed off from service prior to admission to hospital.

There was considerable variation in outcome depending on diagnoses. The diagnoses associated with the lowest rates of rehabilitation were personality disorder, alcohol and substance use disorders, the category labelled 'other' and psychotic illnesses. Reassuringly, given the military role, those diagnosed with anxiety disorders or disorders precipitated by exposure to a potentially traumatizing or stressful event [adjustment disorders, post traumatic stress disorder (PTSD) and acute stress disorder (ASD)] had the highest rates of rehabilitation.

ORs and 95% CI examined the association between discharge from military service, diagnosis and a range of other potential explanatory factors. Table 5 shows the ORs for discharge associated with diagnosis and a range of other factors.

Those with 'non-neurotic' disorders were more likely to leave service prematurely (OR = 2.15 and 95% CI: 1.05–4.40). Further associations with premature separation from service included being male and a short service duration. Non-specific individual intervention rather than group-based or specialized treatments such as cognitive behavioural therapy were associated with a reduced likelihood of leaving the service prematurely (OR = 0.32 and 95% CI: 0.12–0.88).

Discussion

This study found that, of the 0.15% of all service personnel who received inpatient psychiatric care during the study period, only about a quarter were able to return to their unit and continue with or complete their military career. The data also showed that those who had been in service for shorter periods of time were more likely to leave the services before the end of their elected term

Table 3. Socio-demographic, military, illness characteristics and occupational outcome

Characteristics	Discharged (%)	Serving (%)	Significance ^a
Rank			$\chi^2 = 44.3$, d.f. = 1***
Junior rank (junior and junior non-commissioned officer) (<i>n</i> = 341)	81	19	
Senior rank (senior non-commissioned officer, warrant and commissioned officer) (<i>n</i> = 79)	44	56	
Service length (year)*			$\chi^2 = 66.5$, d.f. = 3***
1–4 (<i>n</i> = 123)	97	3	
5–9 (<i>n</i> = 116)	75	25	
10–15 (<i>n</i> = 60)	57	43	
15+ (<i>n</i> = 70)	49	51	
Service arm*			$\chi^2 = 12.9$, d.f. = 2**
Combat troops (<i>n</i> = 150)	84	16	
Combat support arm troops (<i>n</i> = 75)	71	29	
Combat support service troops (<i>n</i> = 145)	66	34	
Gender			$\chi^2 = 11.3$, d.f. = 1***
Female (<i>n</i> = 39)	51	49	
Male (<i>n</i> = 345)	76	24	
Previously treated by a community mental health team			$\chi^2 = 5.0$, d.f. = 1*
Yes	77	23	
No	65	35	
Co-morbidity			$\chi^2 = 3.0$, d.f. = 1, NS
Present	81	19	
Absent	72	28	
Period spent in hospital (days)			$\chi^2 = 1.7$, d.f. = 2, NS
1–10	79	21	
11–30	74	26	
>30	71	29	
Readmission			$\chi^2 = 1.2$, d.f. = 1, NS
First admission	79	27	
Readmission	80	20	

NS, not significant; * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

^aTwo-sided Pearson chi-square test, degrees of freedom (d.f.) and P value.

of service; none of those who had been in for less than a year went on to serve for a full elective term.

The limitations and strengths of this study are that we utilized already existing data sets to derive the data, and the main outcomes were whether personnel had stayed in service or not after inpatient treatment. Although leaving the services early was taken as being a relatively negative outcome, it might be that for some personnel, most especially those who had served for only a short term, a career in the services was not ideal. In such cases, early termination of service would have been a positive outcome for both the individual and the services; our data could not clarify if this was the case. Also, our data were not able to consider the reasons for hospital admission and whether the admitting clinician was worried about health risks or was using a hospital as a sanctuary away from the routine of the barracks or because the military does not operate home treatment teams or assertive outreach services. However, while many mental health studies use psychological rating scales to measure psychological health [8], the use of retention in

service is an objective outcome and unlikely to be subject to obvious bias. Furthermore, the military clinicians who completed hospital admission record sheets were not providing the hospital treatment and thus would be less subject to bias than hospital care providers might have been if they had generated the hospital-related data.

Hospital admission for psychiatric reasons is usually undertaken in four situations: after a trial of community-based treatment has failed, for an assessment that cannot be safely undertaken in the community, to resolve a crisis or to stabilize an emerging or established mental health problem. In order to achieve these aims, an inpatient service needs to provide an environment conducive to the well-being and rapid recovery of service personnel. While there are limited published data regarding service personnel admitted to hospital prior to the study period, a retrospective case note analysis of 48 patients with non-affective psychoses, admitted between 1999 and 2002, found that an established military career and pre-morbid psychological stability determined a positive occupational

Table 4. Diagnosis and rate of discharge or prematurely signed off from the Army

Diagnosis	Neurotic/psychotic group	Serving/completed term, <i>n</i> (%)	Discharged, <i>n</i> (%)	Total
Acute stress disorder	Neurotic	8 (57)	6 (43)	14
Anxiety disorder	Neurotic	2 (50)	2 (50)	4
Adjustment disorder	Neurotic	22 (41)	32 (59)	54
Not suffering from a psychiatric disorder	Not grouped	4 (40)	6 (60)	10
PTSD	Neurotic	7 (30)	16 (70)	23
Mood disorder	Neurotic	38 (27)	103 (73)	141
Substance/alcohol abuse	Non-neurotic	13 (17)	64 (83)	77
Other	See Table 1	2 (14)	12 (86)	14
Psychotic illness	Non-neurotic	2 (8)	24 (92)	26
Personality disorder	Non-neurotic	1 (7)	13 (93)	14
Total		99 (26)	278 (74)	377

Table 5. ORs and 95% CI for discharge or premature termination of service associated with diagnosis and a range of other factors

Variable	OR (95% CI)	Adjusted OR ^a (95% CI)	Adjusted OR ^b (95% CI)
Illness type (non-neurotic)	2.8 (1.6–4.8)	2.1 (1.1–4.1)	2.2 (1.1–4.4)
Combat arm	1	1	1
Combat support arm	0.5 (0.3–0.9)	0.6 (0.3–1.4)	0.7 (0.3–1.5)
Combat service support	0.4 (0.2–0.7)	0.8 (0.4–1.8)	0.9 (0.4–2.0)
Gender (female)	0.3 (0.2–0.7)	0.4 (0.1–0.9)	0.3 (0.1–0.9)
Service length, 1–4 years	1	1	1
Service length, 5–9 years	0.1 (0.3–0.3)	0.2 (0.1–0.5)	0.1 (0.04–0.4)
Service length, 10–15 years	0.04 (0.01–0.1)	0.1 (0.02–0.2)	0.1 (0.02–0.2)
Service length, >15 years	0.03 (0.01–0.1)	0.1 (0.02–0.2)	0.1 (0.01–0.2)
Previous community treatment	0.6 (0.4–0.9)	0.5 (0.3–1.0)	0.5 (0.1–1.00)
Rank (senior/warrant/officer)	0.2 (0.1–0.3)	0.5 (0.2–1.1)	0.5 (0.2–1.1)

^aModel 1 adjusted for the following confounders: illness type, combat arm, gender, service length, previous community treatment and rank.

^bModel 2 adjusted for Model 1 confounders plus type of treatment, where the variables were medication, group treatment, individual treatment, psychotherapy, cognitive behavioural therapy, eye movement desensitization and reprocessing and assessment only.

outcome [9]. However, that study only considered return to work upon discharge and not long-term outcomes.

The DMHS philosophy of care states that secondary mental health care will be delivered close to the soldier's unit or home area to maximize the probability of successful return to work. However, the results of this study suggest that occupational rehabilitation is difficult to achieve following discharge from hospital and that admission to hospital should be considered carefully as it may have far-reaching occupational consequences in a military context. Studies that have examined community-based treatment have found better outcomes. For instance, Gould *et al.* [10] report the outcomes of non-deployed community mental health team treatment where 68% of 409 military patients were returned to full employment. Community-based treatment therefore seems to be effective in returning military personnel to work in the short term; however, little is known about the fate of this group in the longer term. Our current results compare unfavourably with treatment outcomes in both deployed and non-deployed community settings. However, the studies reporting successful return to work only examined short-

term occupational outcome and not retention in the Forces. Furthermore, it is very likely that those who received community rather than hospital treatment represented a patient group who had less severe mental health problems.

In this study, a number of subgroups were more likely to achieve retention in service including those with a longer duration of service and those holding senior and officer rank. However, our finding that none of those who had completed <1 year of service were able to serve on in the Army following hospitalization is of interest. This result may be explained, in part, by the work of Iversen *et al.* [11] who found that soldiers who had experienced childhood adversity (such as being taken into care or abusive parenting) are more psychologically vulnerable than those who have not. It may well be, then, that those who are hospitalized within a year of joining up will have had higher numbers of childhood adversities and therefore were less likely to contend with the numerous stressors associated with service life. We were not able to examine this in our current study but we now routinely collect these data on admission.

Rona *et al.* [12] reported an increase in psychological symptoms in women when they are not deployed on operations, and Felker *et al.* [13] reported that women were over-represented among soldiers attending a deployed mental health clinic. In our study, women were marginally over-represented among those admitted to hospital, but the general outcome for females was more positive than for males; however, this finding was based on a small female sample. This could be explained in part by there being no females among combat troops, the group with the lowest rate of retention in service. Given that females have been found to be at risk of developing psychological problems in the military [14], our data reassuringly suggest that their difficulties are not necessarily linked to early termination of service.

Our data suggested that occupational outcome was not the same for all diagnostic groups. Premature departure from service was most likely for the two largest groups of patients, namely community-treatment-resistant substance misuse and mood disorders, and better for those whose diagnosis may have been related to exposure to potentially stressful or traumatic events, i.e. those who had suffered from PTSD, ASD and adjustment disorders. Those who were found not to be suffering from a psychiatric condition following hospital assessment had occupational outcomes similar to those with stressful exposure-based conditions. It may be that these personnel did not actually require hospital admission and many would have been better served in a community setting. This concept is supported by our finding that those who had not received community treatment prior to hospital admission fared better than those who did, which suggests that the community teams only refer those with more resistant mental health problems to hospital.

Our data suggest that premature departure from service was more common in combat troops. Soldiers serving in the combat arm have to undergo especially arduous training since they are required to be resilient in adverse circumstances, and one might therefore expect a higher rate of return to work as a consequence of this resilience. Our finding might be explained by a potentially higher rate of stigma among combat troops, which has been reported by Hoge *et al.* [15]. Also, it might be that combat troops have more deployment experiences, and as Rona *et al.* and Hoge *et al.* [16] have shown, more deployment experiences are associated with higher rates of psychopathology. However, while higher rates of exposure might increase the propensity to develop psychological disorders, it is not clear how it would affect treatment outcomes. As these soldiers are often recruited from areas where deprivation is likely to be an issue, it might also be that childhood adversity and other psychological risk factors make a significant contribution to mental health problems and occupational adjustment in combat arm troops [17].

One of the key aims of the DMHS is to preserve the strength of the fighting force, and as such, it is reasonable

to see discharge from the Army as undesirable. However, for some, leaving the Armed Forces may well be the most desirable outcome. Whichever interpretation one favours, our data suggest that for certain groups of personnel (young personnel, with a short duration of service who do not suffer with a diagnosis of stress-related or adjustment disorder), retention in service was particularly unlikely. While we would not argue that personnel in these groups should not be admitted to hospital, it may be that soldiers who fall into these categories would be better served by planning a timely and seamless discharge and liaison with National Health Service services rather than continuing with potentially fruitless efforts at retention. However, our findings also suggest that some personnel and rather positively those who have suffered ill health as a result of exposure to traumatic events, and have been ill enough to require hospital treatment, may still go on to enjoy fruitful careers within the services. We continue to gather and analyse hospital admission data and intend to conduct a follow-up study in the future, which will encompass all three branches of the Armed Service, Army, Royal Navy and Royal Air Force, in order to compare a range of outcomes and clinical strategies that may be influenced by the results and recommendations contained in this paper.

Key points

- Hospital admission is a management strategy that is undertaken in only a small minority of soldiers with mental health problems.
- Only one-quarter of those admitted are returned to long-term military occupation, and multiple admissions and lengthy hospital stays do not improve retention in the services.
- Discharge from the Army might serve the best interests of the soldier, and a seamless discharge and transfer of care to civilian mental health services should be considered by admitting clinicians early in the hospitalization process.

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Conflict of interest

N.J. is a full-time reserve member of the Defence Medical Services and N.G. is a full-time active service medical officer, and both are seconded to King's College London; although paid by the Ministry of Defence, they were not directed in any way by the Ministry of Defence in relation to this paper. All other authors declare that they have no conflict of interest.

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