

Changes in Stigma and Barriers to Care Over Time in U.K. Armed Forces Deployed to Afghanistan and Iraq Between 2008 and 2011

Carlos Osório, MSc^{*1}; Norman Jones, MSc^{*1}; Mohammed Fertout, BSc^{*}; Neil Greenberg, MD^{*}

ABSTRACT Stigmatizing beliefs about seeking help for mental health conditions and perceived barriers to care (BTC) may influence the decision to seek support and treatment in U.K. military personnel. Many coalition partners, including the U.K. Armed Forces (UKAF), have made considerable efforts to reduce stigma/BTC although the impact of these efforts over time has not been assessed. We surveyed a total of 23,101 UKAF personnel who deployed to Afghanistan and Iraq between 2008 and 2011 and examined whether stigma/BTC levels changed during this time. The results suggested that stigma, including the fear of being treated differently by commanders and loss of trust among peers, was greater than perceived BTC. The likelihood of reporting stigma/BTC, although significantly greater during deployment than postdeployment, reduced significantly over the survey period. A similar reduction was less apparent during postdeployment phase. These findings support the notion that UKAF's anti-stigma campaigns may have had some positive effects, particularly among deployed personnel. However, we suggest that stigma still plays a part in inhibiting help-seeking, particularly during deployment when stigma rates are higher, and that a careful balance must be struck between encouraging help-seeking and maintaining the operational effectiveness of deployed personnel.

INTRODUCTION

Studies of U.S. and U.K. personnel returning from combat deployment in Afghanistan and Iraq suggest that although the majority of personnel remain psychologically resilient in the face of adversity, some will eventually suffer from a range of psychological disorders including post-traumatic stress disorder (PTSD), major depressive disorder, and alcohol misuse.^{1,2} Military commanders have made substantial efforts to promote engagement with mental health services both during and after deployments; however, recent studies suggest that substantial numbers of those with psychological difficulties do not seek mental health care when they need to.²⁻⁶ A recent U.S. study that evaluated military personnel returning from Afghanistan and Iraq who screened positive for a probable mental health condition (e.g., PTSD and depression) found that between 23% and 40% sought professional health care treatment in the year following screening. Furthermore, the same study also showed that between 38% and 45% of personnel expressed an interest in receiving assistance for a probable mental health condition despite not having sought help.² Studies suggest that the low rates of help-seeking among U.S. military personnel returning from Afghanistan and Iraq may have been secondary to a variety of factors including personnel holding stigmatizing beliefs about mental health care (such as personal embarrassment) and also regarding perceived institutional barriers to care (BTC) (such as a lack of available services).²⁻⁸ Concerns about stigma/BTC have also been previously demonstrated within U.K. Armed Forces (UKAF) personnel deployed in Afghanistan and Iraq.^{5,7} Some authors suggest that stigmatizing beliefs

are promoted by the military culture that encourages resilience and hardiness. However, it is notable that a reluctance to seek help has been reported for physical and mental health problems although mental health-related stigma appears to be more prevalent than that related to physical health conditions.^{9,10} The most common stigmatizing beliefs in military personnel appear to be those associated with the perception that peers or commanders would treat them differently if they were to disclose a mental health condition, or would blame them for their psychological problem, or view them as weak.^{2-7,11} Additionally, help-seeking may be discouraged if personnel perceive institutional BTC about the organization's help-seeking processes (such as not knowing where to seek help or not being able to get time off from work to access care): these perceptions are often compounded by inaccurate knowledge about the clinical process and the types and effectiveness of therapy available.^{5-7,11,12} During the last few years, UKAF have attempted to destigmatize help-seeking for mental health disorders, though the results of these efforts are largely unknown. In response to the growing concerns for those military personnel who might be at higher risk of developing mental health problems following operational deployment, the U.S. and U.K. militaries deliver a variety of psychoeducational interventions that aim to reduce mental health-related stigma and to encourage personnel to seek help when they need it.¹³⁻¹⁷ These include psychoeducation in the form of Battlemind training and Battlemind debriefing.¹⁷ Additional UKAF peer-support initiatives such as Trauma Risk Management have been tried. It is a proactive post-traumatic peer-group-delivered management strategy designed to identify personnel at higher risk of developing mental health problems after exposure to potentially traumatic events in order to engage them with effective treatment or nonspecialist support.^{15,18} Although it is intended to help to modify attitudes about mental health disorders in a randomized

^{*}Academic Department of Psychological Medicine, Academic Centre for Defence Mental Health, Institute of Psychiatry, London, UK.

¹Both authors contributed equally to the preparation of the manuscript.
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controlled trial, it was shown to have little effect upon stigma.^{15,18} To date, no UKAF studies have addressed temporal changes in the perceptions of stigma/BTC in a representative sample of personnel deployed to Afghanistan and Iraq. We have previously reported that there was a significant reduction in the rates of stigma/BTC from during to after deployment.¹⁹ Given that the UKAF had been engaged in stigma reduction efforts, this study assesses whether there had been a change in the rates of reporting stigma during the period that the main anti-stigma/BTC effort was being delivered. This study had three main objectives. First, we examined the rates of stigma/BTC, combat exposure, and PTSD among UKAF personnel deployed to Afghanistan and Iraq between 2008 and 2011. Second, we examined the relationship of stigma/BTC to PTSD during this time. Lastly, we examined changes in the individual components of stigma/BTC.

METHODS

Study Design

Data were examined from nine different surveys conducted by the Academic Centre for Defence Mental Health. These included personnel from all three Service branches of the UKAF, including the Royal Navy (and Royal Marines Commandos), Army, and Royal Air Force. These personnel were deployed at various times to Afghanistan (Operation HERRICK) and/or Iraq (Operation TELIC) between 2008 and 2011. For this study, we stratified the various study samples by the year of deployment and by location of the survey, for instance, whether the data were captured during or immediately after deployment. The samples were constructed as follows:

- (1) 2008 included two postdeployment surveys:
 - (a) Conducted after a short rest period (24–36 hours) in Cyprus at the end of an operational deployment to either Iraq or Afghanistan (known as Third Location Decompression [TLD]).
 - (b) Conducted after a brief overnight rest of 24 to 36 hours undertaken by reservist personnel during an administration period termed “demobilization” in the U.K. before commencing their postdeployment leave.
- (2) In 2009, one survey was conducted with personnel after month 4 or 5 of a 6-month duration deployment in Iraq (known as Operational Mental Health Needs Evaluation [OHMNE I]).
- (3) 2010 included three surveys:
 - (a) Deployed personnel evaluated in their operational location deployment in Afghanistan (OMHNE A1).
 - (b) A postdeployment sample of personnel who undertook a brief psychoeducational program (known as U.K. Battlemind) conducted during

TLD. The latter were reassessed 6-months after receiving the intervention.

- (c) A small-scale survey of TLD.
- (4) 2011 included two surveys:
 - (a) Deployed personnel surveyed in their deployment location in Afghanistan (OMHNE A2).
 - (b) A postdeployed survey conducted during TLD.

In total, the final study dataset contained 23,101 participants. The component datasets have been used in previous studies and the details of the sampling strategy, participants, and response rates are described elsewhere.^{17,20–24}

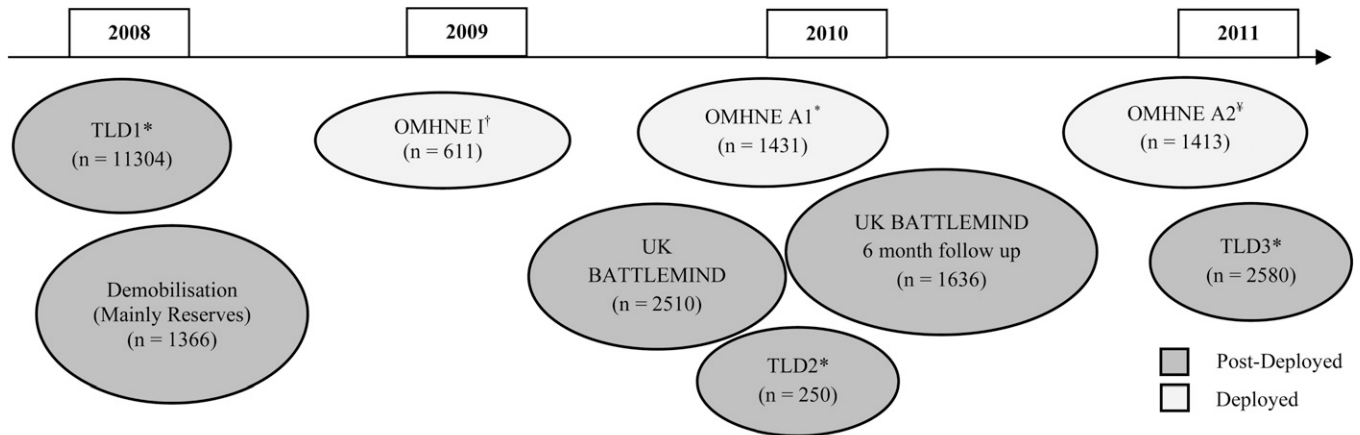
The response rates in the deployed samples were 99.8% in OHMNE I, 99.6% in OHMNE A1, and 95.9% in OHMNE A2. Response rates in the postdeployed samples were 87% in TLD1 and 66.1% in the Battlemind study. Because of operational and logistical constraints we were unable to generate accurate response rates for the TLD2, TLD3, and demobilization.¹⁹ Figure 1 shows the various component datasets by year of evaluation and deployment phase.

The surveys and studies used to generate the datasets used in this research have previously received approval from the U.K. Ministry of Defence Research Ethics Committee, the King’s College Hospital NHS Research Ethics Committee, or both.

Measures

Sociodemographic and military characteristics included sex, age, Service branch, and military rank. Service type (reserve or regular) was not included as this factor was not reliably measured in the various samples studied. Combat exposure was assessed using two questions about perceptions of impending death or serious injury and time spent operating in a hostile area.

The perceived stigma/BTC element included seven questions common to all datasets. This comprised of four questions about internal stigma such as perceptions of weakness or embarrassment associated with disclosing a mental health problem and three questions about BTC such as concerns about confidentiality and not knowing where to get help. Respondents rated each item using a 4-point Likert scale that ranged from strong disagreement to strong agreement; neutral responses were dropped from the analysis as they were not present in all the different datasets and could not be allocated to any of the agreement categories when we generated a binary variable.^{2,25} The items were then recoded into a binary scale where the “strongly disagree” and “disagree” responses were combined as were the “agree” and “strongly agree” responses. We dealt with missing data by imputing responses using the following approach; for the combined internal stigma items, where three of the four items were present, we generated a response congruent with the responses that were present. If three positive answers were present,



*TLD – Third Location Decompression; †OMHNE I– Operational Mental Health Needs Evaluation – Iraq (2009); ‡OMHNE A1 – Operational Mental Health Needs Evaluation – Afghanistan (2010); §OMHNE A2 – Operational Mental Health Needs Evaluation – Afghanistan (2011)

Note: TLD represents the process where military personnel begin to psychologically and physically “unwind” from their operational tour in a purpose developed safe location in Cyprus before returning to the UK. Demobilisation corresponds to the process, which prepares reserve military personnel with briefings and administration before returning to their military life after deployment. OMHNE refers to a survey administered to UK military personnel whilst deployed and aims to evaluate in-theatre their mental health and provision of operational mental health support. UK BATTLEMIND refers to a post-deployment psycho-educational briefing package which intends to assist military personnel to have a successful and smooth transition from the combat-zone to the home-front.

FIGURE 1. Summary of the study datasets by year of evaluation and deployment phase.

a fourth positive response was imputed and the same strategy was used for negative responses. In those cases where two positive and one negative responses were present, a positive response was imputed and if two negative and a positive responses were present, a negative response was imputed. The same strategy was used for BTC, so that when two positive answers were present, a third positive response was imputed and the same process was applied to the negative responses. When a positive and a negative response were present, we recorded a missing response. We used this strategy of imputation as we had dropped some neutral responses from the analysis which resulted in missing data. In practice, this meant that neutral responses were recorded in keeping with the prevailing pattern of responses given by the participant. A count variable of one or more negative responses was then generated and a cutoff point was used to examine the perceptions of stigma/BTC among participants. The alpha reliability coefficient for the stigma/BTC items was high ($\alpha = 0.92$).

PTSD caseness was assessed using one of two screening instruments; the first was the 4-item Primary Care Post-Traumatic Stress Disorder Scale (PC-PTSD)²⁶ and the second, the 17-item Post-Traumatic Stress Disorder Checklist—Civilian Version (PCL-C).²⁷ Both measures have been used previous in military personnel and are used to assess the three dimensions of PTSD, including re-experiencing, numbing, avoidance, and hyperarousal symptoms²⁸ PTSD “caseness” was considered to be present when 3 of the 4 questions in the PC-PTSD were endorsed,²⁶ or when there was a PCL score

of 50 or more.^{27,29} Both these screening instruments have already been used in other U.K. studies with personnel returning from Afghanistan and Iraq,^{1,30–32} and have performed well as a screening instrument to evaluate PTSD.²⁸ The test-retest reliability for the PC-PTSD was 0.83, representing good reliability,²⁶ although the PCL was 0.96, representing excellent reliability.²⁷ The PTSD assessment instruments included the PCL-C in the Battlemind and the OHMNE studies, although the TLD and the demobilization studies used the PC-PTSD.

Statistical Analysis

All statistical analyses were undertaken using the Statistical Package for Social Sciences (SPSS) version 18 for Windows. Sociodemographic and military characteristics included sex, age, Service branch, engagement type, and rank; stigmatizing beliefs/BTC, PTSD caseness, and combat experiences were compared by year and deployment phase (during vs. post-deployment). Categorical variables were examined using Pearson’s chi-square test. Linear trends were assessed using the chi-square test for linear trend in proportions. Binary logistic regression was used to examine the relationship between stigmatizing beliefs/BTC and the year that the study was performed controlling for a range of potential confounding factors such as PTSD status and combat exposure. Odd ratios (ORs) and 95.0% confidence intervals (95% CIs) were generated to estimate the effects of several deployment factors on predicting stigma/BTC symptoms by year of

TABLE I. Sample Characteristics of Participants Stratified by Year of Evaluation and Deployment Phase

	2008 N (%)	2009 N (%)	2010 N (%)	2010 N (%)	2011 N (%)	2011 N (%)	χ^2 d.f.	χ^2 d.f.
	Postdeployed	Deployed	Deployed	Postdeployed	Deployed	Postdeployed	$p =$ Deployed	$p =$ Postdeployed
Sociodemographic Factors								
Sex								
Male	10571 (93.6)	528 (88.7)	1308 (91.7)	4304 (98.0)	1299 (93.3)	2228 (90.9)	$\chi^2 = 11.74$, d.f2 $p = <0.01$	$\chi^2 = 172.07$, d.f2 $p = <0.001$
Female	728 (6.4)	67 (11.3)	119 (8.3)	90 (2.0)	93 (6.7)	223 (9.1)		
Age								
18–24	3990 (36.1)	257 (42.9)	605 (42.3)	1732 (41.8)	575 (40.8)	577 (23.1)	$\chi^2 = 31.24$, d.f10 $p = 0.01$	$\chi^2 = 390.06$, d.f10 $p = <0.001$
25–29	2763 (25.0)	143 (23.9)	380 (26.6)	1157 (28.0)	379 (26.9)	693 (27.8)		
30–34	1707 (15.5)	76 (12.7)	181 (12.7)	544 (13.1)	241 (17.1)	473 (18.9)		
35–39	1525 (13.8)	68 (11.4)	153 (10.7)	458 (11.1)	141 (10.0)	352 (14.1)		
40–44	657 (6.0)	40 (6.7)	67 (4.7)	173 (4.2)	56 (4.0)	253 (10.1)		
45+	398 (3.6)	15 (2.5)	44 (3.1)	75 (1.8)	18 (1.3)	149 (6.0)		
Military Factors								
ServiceBranch								
Combat Arms	4597 (45.3)	243 (43.3)	794 (56.0)	2097 (48.7)	729 (51.7)	NA	$\chi^2 = 57.17$, d.f4 $p = <0.001$	$\chi^2 = 194.61$, d.f4 $p = <0.001$
Combat	2696 (26.5)	142 (25.3)	190 (13.4)	1216 (28.2)	303 (21.5)	NA		
Support Arms								
Combat Service Support	2863 (28.2)	176 (31.4)	434 (30.6)	996 (23.1)	379 (26.9)	NA		
Rank								
JNR	4300 (38.0)	241 (39.5)	617 (43.1)	1898 (43.4)	625 (44.4)	704 (27.5)	$\chi^2 = 13.62$, d.f8 $p = 0.09$	$\chi^2 = 1352.91$, d.f8 $p = <0.001$
JNCO	3886 (34.3)	190 (31.1)	433 (30.3)	1264 (28.9)	452 (32.1)	794 (31.0)		
SNCO	1518 (13.4)	103 (16.9)	212 (14.8)	724 (16.5)	182 (12.9)	575 (22.4)		
WO	387 (3.4)	70 (11.5)	148 (10.3)	432 (9.9)	141 (10.0)	426 (16.6)		
Officers	1234 (10.9)	6 (1.0)	21 (1.5)	58 (1.3)	9 (0.6)	65 (2.5)		

JNR—junior; JNCO—junior non-commissioned officer; SNCO—senior non-commissioned officer; WO—warrant officer. Numbers might not add up to column totals because of missing data; NA—Data unavailable.

deployment and phase of evaluation. Statistical significance was $p = <0.05$.

RESULTS

Our results suggest that there were significant differences in the sociodemographic characteristics of the various samples with the greatest variation found among the postdeployed samples. Males constituted the majority of all samples at all

time points, while female proportions varied between 2.0% and 11.3% depending on year of evaluation and deployment phase. Overall figures suggest that the proportion of females make up around 9.5% of any deployed U.K. force.³³ Military personnel younger than 24 years old represented around 40% of each studied sample, other than in the 2011 postdeployment sample when the rate was 23.1%. Official figures suggest that around 28% of all deployed samples are usually

TABLE II. Stigmatizing Beliefs/BTC of Participants, Stratified by Year of Evaluation and Deployment Phase

		2008 N (%)	2009 N (%)	2010 N (%)	2010 N (%)	2011 N (%)	2011 N (%)
		Postdeployed	Deployed	Deployed	Postdeployed	Deployed	Postdeployed
I would not seek help for a mental health problem, my commanders would treat me differently	Disagree	5963 (64.6)	257 (44.5)	755 (56.1)	2181 (64.0)	748 (56.7)	1257 (65.6)
	Agree	3273 (35.4)	321 (55.5)	591 (43.9)	1229 (36.0)	571 (43.3)	660 (34.4)
I would not seek help for a mental health problem, I would be seen as weak	Disagree	6183 (67.2)	343 (59.7)	863 (64.0)	2227 (65.6)	864 (65.6)	1351 (70.9)
	Agree	3021 (32.8)	232 (40.3)	486 (36.0)	1169 (34.4)	453 (34.4)	555 (29.1)
I would not seek help for a mental health problem, it would harm my career	Disagree	6554 (70.3)	339 (58.7)	948 (70.4)	2403 (71.0)	927 (70.4)	1391 (71.9)
	Agree	2769 (29.7)	239 (41.3)	398 (29.6)	980 (29.0)	390 (29.6)	543 (28.1)
I would not seek help for a mental health problem, it would be too embarrassing	Disagree	7052 (75.0)	364 (62.9)	1001 (74.3)	2451 (81.2)	1019 (77.0)	1573 (80.3)
	Agree	2355 (25.0)	215 (37.1)	346 (25.7)	936 (18.8)	304 (23.0)	385 (19.7)
I would not seek help for a mental health problem, there would be difficulty getting time off work	Disagree	7169 (77.3)	380 (66.1)	941 (70.2)	2864 (80.8)	953 (72.1)	1677 (85.4)
	Agree	2100 (22.7)	195 (33.9)	399 (29.8)	682 (19.2)	368 (27.9)	287 (14.6)
I would not seek help for a mental health problem, my visit would not remain confidential	Disagree	7090 (75.5)	431 (74.8)	1064 (78.9)	2804 (78.8)	1079 (82.1)	1672 (83.2)
	Agree	2304 (24.5)	145 (25.2)	285 (21.1)	754 (21.2)	236 (17.9)	337 (16.8)
I would not seek help for a mental health problem, because I don't know where to get help	Disagree	8301 (87.0)	501 (85.2)	1181 (87.4)	3437 (93.4)	1208 (90.9)	1896 (94.2)
	Agree	1242 (13.0)	87 (14.8)	170 (12.6)	243 (6.6)	121 (9.1)	116 (5.8)

TABLE III. Rates of Reporting Stigmatizing Beliefs/BTC by Year of Evaluation and Deployment Phase

	2008 N (%)		2009 N (%)		2010 N (%)		2011 N (%)		χ^2 d.f. <i>p</i> = Deployed	χ^2 d.f. <i>p</i> = Postdeployed
	Postdeployed	Deployed	Deployed	Postdeployed	Deployed	Postdeployed	Deployed	Postdeployed		
No Internal Stigma Items	5198 (60.9)	202 (35.1)	591 (43.9)	1777 (58.8)	606 (46.0)	1110 (63.3)			$\chi^2 = 19.91$, d.f2	$\chi^2 = 9.93$, d.f2
One or More Internal Stigma Items (4 Items)	3338 (39.1)	373 (64.9)	754 (56.1)	1247 (41.2)	710 (54.0)	643 (36.7)			<i>p</i> = <0.001	<i>p</i> = 0.007
No Barriers to Care Items	6367 (73.0)	298 (52.0)	755 (56.4)	2548 (77.5)	797 (60.7)	1530 (81.8)			$\chi^2 = 13.34$, d.f2	$\chi^2 = 76.66$, d.f2
One or More Barriers to Care Items (3 Items)	2357 (27.0)	275 (48.0)	583 (43.6)	738 (22.5)	515 (39.3)	340 (18.2)			<i>p</i> = 0.001	<i>p</i> = <0.001
No Stigma Items (7 items)	4560 (60.9)	167 (29.3)	474 (35.5)	1552 (59.8)	497 (38.0)	1022 (65.1)			$\chi^2 = 13.14$, d.f2	$\chi^2 = 12.53$, d.f2
One or More Stigma/BTC Items (7 items)	2924 (39.1)	403 (70.7)	863 (64.5)	1045 (40.2)	811 (62.0)	548 (34.9)			<i>p</i> = 0.001	<i>p</i> = 0.002

younger than 24 years old.³³ Those personnel with a combat role (~49%) constituted the largest component of the various service arms in each of the samples. Official figures suggest that only around 34% of Army personnel serve in a combat arm role. Finally, around 70% of each sample was junior ranks and junior NCOs, with the exception of 2011 where the figure was much lower (58.5%). In a whole force sample, a rate of 60.2% would normally be expected, therefore junior and junior command ranks were over-represented in all but one sample. Table I shows the demographic and military characteristics of the samples by year of evaluation and deployment phase.

The rank order of the individual stigma/BTC scale components was broadly similar at each time point. Across all years, the most common stigmatizing beliefs were that commanders would treat a person differently if they had a mental health condition or that they would be seen as weak by their peers if they sought mental health care. Significant concerns were expressed at lower levels about potential career harm and embarrassment if mental health support were to be sought. The most common perceived BTC across the years were difficulty in getting time off work to attend an appointment or fearing that the mental health visit would not remain confidential. Not knowing where to get help was a relatively infrequent concern. Overall, significantly higher rates of reporting one or more stigmatizing beliefs/BTC were present among deployed personnel. These results have been reported elsewhere.¹⁹ Table II shows the details of reported stigma/BTC stratified by year of evaluation and deployment phase.

There was a significant downward trend in the levels of endorsing one or more internal stigmatizing belief between 2009 and 2011 from around 64.9% in 2009, through 56.1% in 2010 to 54.0% in 2011 (χ^2 test for linear trend = 16.56, *p* = <0.001). There was no such trend in the postdeployment

data (χ^2 test for linear trend = 0.60, *p* = 0.44). For BTC, there was also a significant downward trend during the deployment phase where rates decreased from around 48.0% in 2009, through around 43.6% in 2010 to 39.3% in 2011 (χ^2 test for linear trend = 13.34, *p* = <0.001). Additionally, a similar downward reduction was also observed in the postdeployment phase for BTC where the rates reduced from 27.0% in 2008, through 22.5% in 2010 to 18.2% in 2011 (χ^2 test for linear trend = 76.64, *p* = <0.001). Finally, there was a significant linear reduction in deployment stigma/BTC over the survey years (χ^2 test for linear trend = 12.10, *p* = <0.001) and a weaker significant linear reduction in reporting stigma during the postdeployment surveys over time (χ^2 test for linear trend = 4.82, *p* = <0.05). Table III shows the details of the rates of reporting stigma/BTC stratified by year of evaluation and deployment phase.

The study components that used the PCL questionnaire generated a PTSD caseness rate that was lower than those which used the PC-PTSD. We found a modest but significant overall downward trend in the rates of probable PTSD during deployment from 2009 to 2011 (χ^2 test for linear trend in proportions = 4.35, *p* = <0.05). Furthermore, we found a highly significant reduction over time in postdeployment PTSD rates (χ^2 test for linear trend in proportions = 103.58, *p* = <0.001). Table IV shows the details of the PTSD data stratified by year of evaluation and deployment phase.

Unadjusted binary logistic regression suggested that, for the deployed samples, compared to 2009, the years 2010 and 2011 were associated with a reduced odds of reporting one or more stigmatizing beliefs/BTC (2010 OR 0.75 95% CI 0.61–0.93, 2011 OR 0.68 95% CI 0.55–0.84). When adjusted for PTSD and combat exposure and then both potential confounding variables together this effect remained significant. In the postdeployed sample, compared to 2008 there was no

TABLE IV. PTSD Caseness of Participants, Stratified by Year of Evaluation and Deployment Phase

	2008 N (%)		2009 N (%)		2010 N (%)		2011 N (%)		χ^2 d.f. <i>p</i> = Deployed	χ^2 d.f. <i>p</i> = Postdeployed
	Postdeployed	Deployed	Deployed	Postdeployed	Deployed	Postdeployed	Deployed	Postdeployed		
PTSD Caseness	11574 (94.8)	585 (96.7)	1374 (97.3)	4241 (96.9)	1387 (98.2)	2469 (99.0)			$\chi^2 = 4.40$, d.f2	$\chi^2 = 103.58$, d.f2
Not a Case	629 (5.2)	20 (3.3)	38 (2.7)	136 (3.1)	26 (1.8)	26 (1.0)			<i>p</i> = 0.11	<i>p</i> = <0.001

TABLE V. Rates of Reporting One or More Stigmatizing Beliefs/BTC Stratified by Year of Evaluation and Deployment Phase

	Reporting One or More Stigmatizing beliefs/BTC Items			
	OR (95% CI)	OR (95% CI) ^a	OR (95% CI) ^b	OR (95% CI) ^c
Deployed Sample				
2009	1	1	1	1
2010	0.75 (0.61–0.93)	0.76 (0.61–0.94)	0.63 (0.50–0.79)	0.63 (0.50–0.80)
2011	0.68 (0.55–0.84)	0.68 (0.55–0.85)	0.59 (0.47–0.74)	0.60 (0.48–0.76)
Postdeployed Sample				
2008	1	1	1	1
2010	1.05 (0.96–1.15)	1.09 (0.99–1.19)	1.02 (0.93–1.11)	1.06 (0.96–1.16)
2011	0.84 (0.75–0.94)	0.88 (0.78–0.99)	0.96 (0.85–1.09)	1.00 (0.88–1.13)

^aModel 1 adjusted for PTSD. ^bModel 2 adjusted for combat exposure. ^cModel 3 adjusted for all variables.

significant difference in the frequency of reporting stigma/BTC in 2010 in the unadjusted analysis and following adjustment for PTSD and combat exposure both alone and combined. In 2011, compared to 2008 there was a reduced odds of reporting one or more stigma/BTC item in the unadjusted analysis (OR 0.84 95% CI 0.75–0.94) and following adjustment for PTSD (OR 0.88 95% CI 0.78–0.99) but not following adjustment for combat exposure. The results of the analysis are presented in Table V.

DISCUSSION

This is the first study to examine how rates of stigmatizing beliefs/BTC among U.K. military personnel have changed over time. The main findings were firstly, that over a number of years, stigmatizing beliefs were more frequently endorsed than BTC in both the deployed and postdeployed samples. Secondly, there was a significant reduction in the odds of reporting stigma/BTC among deployed personnel, which was not affected by confounding variables; the reduction in stigma/BTC found immediately following deployment became non-significant when adjusted for confounding variables. Thirdly, deployed personnel reported significantly higher rates of stigma/BTC than personnel surveyed after deployment.

As had been reported in previous studies, we found that beliefs about how leaders might treat subordinates if they tried to seek mental health care was the most prevalent concern; this finding is congruent with other military mental health literature.⁷ Also in keeping with published literature we found that the second most common stigmatizing belief reported by personnel was their concern about being seen as weak and that stigmatizing beliefs are more commonly reported than perceived BTC.^{2,5–7,12} Both perceived stigma/BTC may be impediments to seeking help for mental health problems when they occur in the context of the much prized military culture of strength, self-sufficiency, and resilience.³⁴ In spite of the recent efforts to destigmatize mental health problems in the UKAF, our results suggest that a significant proportion of personnel continue to report these beliefs and predict that any mental health seeking behavior may adversely affect their relationship with peers and commanders and that help-seeking may also impact their career.^{5,7,11}

Our data also suggest that in both deployed and post-deployed settings, personnel reported low levels of PTSD caseness and prevalence rates decreased with time. This reduction may be an expression of military personnel's hardiness in the face of adversity which, while being a much prized military attribute, may also fuel culturally driven negative beliefs about mental health symptoms.^{8,34} Whether or not the reduction in the rates of probable PTSD is a result of increased help-seeking, levels of combat exposure or a result of nonrandom sampling is not clear; it is notable that other data obtained from a cross sectional randomly selected sample of UKAF personnel did not find a similar reduction over time² although that study's sampling time frame preceded those included in this study.

We have previously shown that stigma/BTC are more frequently reported when personnel were still deployed¹⁹ and argued that the pressures of being deployed, including working in a close-knit team might promote a perceived need to "keep going" and not let the team down even when mental health symptoms are present. Such an attitude might in turn fuel stigmatizing beliefs/BTC. Nevertheless, we must bear in mind that some of the concerns held by military personnel on deployment may not be totally unfounded. Perceptions of certain BTC such as perceiving difficulties in getting time off work to attend an appointment during deployment when deployed in austere locations are realistic, and help-seeking may also be more visible to peers and commanders, which might serve to further inhibit such behavior. However, we found that rates of endorsing one or more stigmatizing beliefs have decreased over the study period, during the deployment phase, even when controlling for variables such as PTSD or combat exposure. Our results also suggest that the rates of reporting internal stigma during deployment fell significantly by around 11% overall and perceived BTC fell by a smaller but statistically significant figure of approximately 9%. For combined stigma/BTC, the reduction is around 9%. These findings may suggest that the UKAF's consistent efforts to reduce mental health stigma may have been effective for deployed personnel. It might also be argued that predeployment stress briefings may have covered help-seeking concerns by providing clear information about mental health

and help-seeking processes. It is also possible that the same efforts have contributed to the falling rates of PTSD and it is known that personnel with mental health symptoms are more likely to report stigma.^{2,5} However, when we adjusted for PTSD caseness in the regression model, the reduction in stigma remained significant. In the postdeployment phase, there was a marginal decrease in stigma/BTC from 2010 to 2011, however, this effect became nonsignificant when we adjusted for possible confounders.

The lack of decrease of stigma/BTC in the postdeployment sample may be a result of our study being underpowered to find a significant effect or it may be that the military's efforts to reduce stigma/BTC have not significantly impacted upon beliefs held by postdeployed personnel. It is notable that other authors⁴ have also suggested that stigma/BTC following deployment is a relatively enduring problem which is relatively stable over time. Our results suggest that operationally focused destigmatizing efforts, such as improved predeployment briefings may have helped. These briefings include information about possible sources of help-seeking procedures, a very clear message that resolving mental health problems takes courage and that resolving mental health problems rather than hiding them will benefit both the individual and others.²⁴ Additionally, leader actions have been shown positively affect deployment mental health and we have previously shown that leadership in the UKAF is highly rated.²³ Britt et al³⁵ have suggested that leaders, particularly non-commissioned officers, can have a significant effect upon help-seeking. We therefore suggest that the increased briefing of commanders about the powerful effects of leadership upon mental health²³ may have played a part in the reduction of the stigma/BTC in deployed personnel. However, it may be that similarly operationally focused postdeployment interventions^{16,30} were less effective in postdeployed personnel. All U.K. stress briefing packages advise military personnel about recognizing mental health symptoms in one-self and others, self-help and robust encouragement to seek mental health help as soon as possible, with the objective of early stage prevention of subsequent degradation in performance and ultimately harm to the military career. However, it may be that operationally focused briefings fail to deal properly with the concerns that postdeployment troops have. For instance, our surveys of postdeployed personnel undertaken within the first 48 hours after leaving an operational environment show that they are far more concerned with re-establishing relationships with loved ones and getting back to their usual work pattern than they are dealing with distressing memories/thoughts of their recent deployment.²² Whether differently focused postdeployment briefings might alter postdeployment stigma/BTC could be a topic explored in future studies.

Study Limitations

This study is derived from a series of cross-sectional samples and included different military personnel evaluated at differ-

ent time points and phases of deployment, which varied in character considerably. We therefore accept that there could be a wide range of confounding variables that we could not account for. Although we used a measure of stigma/BTC used widely in other military studies, this remains a nonvalidated self-report measure for stigma/BTC. To compound matters, we utilized an imputation strategy to correct for missing data, which may have introduced some bias, though, when we compared the results of analyses using imputed and original datasets, the results were very similar and this did not change the significances. Furthermore, we distilled only seven similar stigma items that were present in all datasets; we therefore cannot say whether the discarded stigma items could be important and may have provided additional information for this study. This strategy and limitation also applies to the generation of the demographic characteristics. Furthermore, PTSD caseness was derived from two different measures, the use of which may have inflated the PTSD rates in the 2008 studies, which utilized the PC-PTSD. Nevertheless and despite its limitations, this research provides additional information about the perceptions of stigma/BTC among U.K. military personnel evaluated between 2008 and 2011.

CONCLUSION

Significant efforts have been made to reduce stigma/BTC among U.K. military personnel. The findings of this study suggest that these may have been effective in reducing negative attitudes toward mental healthcare in deployed troops but had no significant effect among postdeployed personnel. We suggest that more consideration is given to ensuring that the military's anti-stigma campaigns address mental health-related stigma whether or not they relate to deployment. Likely targets for future anti-stigma campaigns would be concerns about being treated differently by commanders and being viewed as "weak" by peers if the decision to seek help for a mental health condition is made, which are the two most commonly reported stigmatizing beliefs in both this and previous studies. Whether future interventions would be effective, which include different approaches for those who are still deployed and those who have already returned from their deployment, will require further investigation.

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REFERENCES

1. Fear NT, Jones M, Murphy D, Hull L, Iversen AC, Coker B, et al: What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK Armed Forces? A cohort study. *Lancet* 2010; 375: 1783–97.
2. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL: Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *N Engl J Med* 2004; 351: 13–22.

3. Kim PY, Britt TW, Klocko RP, Riviere LA, Adler AB: Stigma, negative attitudes about treatment, and utilization of mental health care among soldiers. *Mil Psych* 2011; 23: 65–81.
4. Kim PY, Thomas JL, Wilk JE, Castro CA, Hoge CW: Stigma, barriers to care, and use of mental health services among active duty and national guard soldiers after combat. *Psychiatr Serv* 2010; 61: 582–8.
5. Langston V, Greenberg N, Fear N, Iversen A, French C, Wessely S: Stigma and mental health in the Royal Navy: a mixed methods paper. *J Ment Health* 2010; 19: 8–16.
6. Pietrzak RH, Johnson DC, Goldstein MB, Malley JC, Southwick SM: Perceived stigma and barriers to mental health care utilization among OEF-OIF veterans. *Psychiatr Serv* 2009; 60: 1118–22.
7. Gould M, Adler A, Zamorski M, Castro C, Hanily N, Steele N, et al: Do stigma and other perceived barriers to mental health care differ across Armed Forces? *J R Soc Med* 2010; 103: 148–56.
8. Vogt D: Mental health-related beliefs as a barrier to service use for military personnel and veterans: a review. *Psychiatr Serv* 2011; 62: 135–42.
9. Britt TW: The stigma of psychological problems in a work environment: evidence from the screening of service members returning from Bosnia. *J Appl Soc Psychol* 2000; 30: 1599–618.
10. Rona RJ, Jones M, French C, Hooper R, Wessely S: Screening for physical and psychological illness in the British Armed forces: I: the acceptability of the programme. *J Med Screen* 2004; 11: 148–53.
11. Iversen AC, Van Staden L, Hughes JH, Greenberg N, Hotopf M, Rona RJ, et al: The stigma of mental health problems and other barriers to care in the UK Armed Forces. *BMC Health Serv Res* 2011; 10: 1–10.
12. Britt TW, Greene–Shortridge TM, Brink S, Nguyen QB, Rath J, Cox AL, et al: Perceived stigma and barriers to care for psychological treatment: implications for reactions to stressors in different contexts. *J Soc Clin Psychol* 2008; 27: 317–35.
13. Adler AB, Bliese PD, McGurk D, Hoge CW, Castro CA: Battlemind debriefing and battlemind training as early interventions with soldiers returning from Iraq: randomization by platoon. *J Consult Clin Psychol* 2009; 77(5): 928–40.
14. Gould M, Greenberg N, Hetherington J: Stigma and the military: evaluation of a PTSD psychoeducational program. *J Trauma Stress* 2007; 20: 505–15.
15. Greenberg N, Langston V, Fear NT, Jones M, Wessely S: An evaluation of stress education in the Royal Navy. *Occup Med* 2009; 59: 20–4.
16. Mulligan K, Fear NT, Jones N, Alvarez H, Hull L, Naumann U, et al: Postdeployment battlemind training for the UK Armed Forces: a cluster-randomized controlled trial. *J Consult Clin Psychol* 2012; 80: 331–41.
17. Mulligan K, Fear NT, Jones N, Wessely S, Greenberg N: Psychoeducational interventions designed to prevent deployment-related psychological ill-health in Armed Forces personnel: a review. *Psychol Med* 2011; 41: 673–86.
18. Greenberg N, Langston V, Iversen AC, Wessely S: The acceptability of “trauma risk management” within the UK Armed Forces. *Occup Med* 2011; 61: 184–9.
19. Osório C, Jones N, Fertout M, Greenberg N: Perceptions of stigma and barriers to care among UK military personnel deployed to Afghanistan and Iraq. *Anxiety Stress Coping* 2012; 1–19.
20. Burdett H, Jones N, Fear NT, Wessely S, Greenberg N: Early psychosocial intervention following operational deployment: analysis of a free text questionnaire response. *Mil Med* 2011; 176: 620–5.
21. Fertout M, Jones N, Greenberg N, Mulligan K, Knight T, Wessely S: A review of United Kingdom Armed Forces’ approaches to prevent post-deployment mental health problems. *Int Rev Psychiatry* 2011; 23: 135–43.
22. Jones N, Burdett H, Wessely S, Greenberg N: The subjective utility of early psychosocial interventions following combat deployment. *Occup Med* 2011; 61: 102–7.
23. 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: 49–59.
24. Mulligan K, Jones N, Woodhead C, Davies M, Wessely S, Greenberg N: Mental health of UK military personnel while on deployment in Iraq. *Br J Psychiatry* 2010; 197: 405–10.
25. Iversen AC, Van Staden L, Hughes JH, 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: 1–12.
26. Prins A, Ouimette P, Kimerling R, Cameron RP, Hugelshofer DS, Shaw-Hegwer J, et al: The primary care PTSD screen (PC-PTSD): development and operating characteristics. *Primary Care Psychiatry* 2004; 9: 9–14.
27. Weathers FW, Litz BT, Herman DS, Huska JA, Keane TM: The PTSD checklist (PCL): reliability, validity, and diagnostic utility. 1993. From International Society of Traumatic Stress Studies available at http://www.pdhealth.mil/library/downloads/PCL_sychometrics.doc; accessed January 18, 2012.
28. Bliese PD, Wright KM, Adler AB, Cabrera O, Castro CA, Hoge CW: Validating the primary care posttraumatic stress disorder screen and the posttraumatic stress disorder checklist with soldiers returning from combat. *J Consult Clin Psychol* 2008; 76: 272–81.
29. Blanchard EB, Jones-Alexander J, Buckley TC, Forneris CA: Psychometric properties of the PTSD checklist (PCL). *Behav Res Ther* 1996; 34: 669–73.
30. Iversen AC, Fear NT, Ehlers A, Hacker Hughes J, Hull L, Earnshaw M, et al: Risk factors for post-traumatic stress disorder among UK Armed Forces personnel. *Psychol Med* 2008; 38: 511–22.
31. Iversen AC, Van Staden L, Hughes JH, Browne T, Greenberg N, Hotopf M, et al: Help-seeking and receipt of treatment among UK service personnel. *Br J Psychiatry* 2010; 197: 149–55.
32. Rona RJ, Jones M, Iversen A, Hull L, Greenberg N, Fear NT, et al: The impact of posttraumatic stress disorder on impairment in the UK military at the time of the Iraq war. *J Psychiatric Res* 2009; 43: 649–55.
33. DASA. National Statistics Publication, 2012. Available at <http://www.dasa.mod.uk>; accessed January 20, 2012.
34. Langston V, Gould M, Greenberg N: Culture: what is its effect on stress in the military? *Mil Med* 2007; 172: 931–5.
35. Britt TW, Wright KM, Moore D: Leadership as a predictor of stigma and practical barriers toward receiving mental health treatment: a multilevel approach. *Psychol Serv* 2012; 9: 26–37.