



# Getting a peace of the action: measures of post traumatic stress in UK military peacekeepers

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## DECLARATIONS

### Competing interests

NG is a full time active service medical officer who has been seconded to King's College Centre for Military Health Research as a liaison officer; although paid from Ministry of Defence funds he was not directed in any way by the Ministry in relation to this publication. SW is Honorary Civilian Consultant Advisor to the British Army. All other authors declare that they have no conflict of interest

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## Summary

**Objectives** This study aimed to measure prevalence of post traumatic stress disorder (PTSD) in a sample of UK Armed Forces peacekeepers. The study also aimed to explore the influence of deploying without an established peer group (deployment status) upon health outcomes using an accepted diagnostic tool for PTSD (PCL-M) and an alternative measure of post-traumatic distress.

**Design** Using a sub-sample of the King's military cohort we surveyed personnel that deployed on peacekeeping operations between 1991 and 2000 ( $n=1198$ ).

**Setting** Respondents' mean age was 36 years (min, 23 to max, 60) and 81% ( $n=964$ ) were serving in the Armed Forces at the time of participation.

**Main outcome measures** PTSD prevalence was determined in British military peacekeepers using the PLC-M (cut-offs 44 and 50), the General Health Questionnaire (GHQ-12) and a composite brief measure of potential post traumatic symptomology, 'Post Traumatic Stress Reaction' (PTSR) for comparison.

**Results** PTSD prevalence varied from 3.6 to 5.5%. Officers and married personnel were less likely to be cases. Neither gender, age or deployment status influenced PTSD prevalence.

**Conclusions** PTSD was an uncommon disorder in this sample of British military peacekeepers, with prevalence rates being lower than those reported by other nations. Deploying without an established peer group was not associated with developing PTSD. We postulate that differences in culture and operational practices may account for the lower rates of PTSD.

## Introduction

That there is a link between military action and psychological injury is not in doubt. War-related neuroses have been known for many generations, although prior to World War II such problems were thought to be due to constitutional weakness and/or poor training.<sup>1</sup> Since World War II, however, military service itself has been regarded as a risk factor for developing psychiatric disorders including post traumatic stress disorder (PTSD). The concept and diagnosis of PTSD arose from the Vietnam War and has since become firmly

enmeshed in popular volumes of psychiatric classification. PTSD is an important diagnosis for both health and financial reasons as currently service related PTSD is the most common psychiatric condition for which US veterans seek compensation.<sup>2</sup>

Over the past few decades, the British military has spent relatively little time waging conventional battles but has instead been engaged on numerous peacekeeping operations (PKOs). Military peacekeepers are often exposed to traumatic stressors, many being similar to those found during conventional war such as the threat of death or

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seeing dead bodies. PKOs are characterized by varying degrees of physical danger. The United Nations Peacekeeping Force in Cyprus, established in 1964, suffered 167 fatalities in the first 32 years of its existence whereas a United Nations Operation in Somalia suffered 147 fatalities in just two years.<sup>3</sup> (Lower intensity missions are often referred to as 'peacekeeping' whilst higher risk operations are termed 'peace enforcement'. However, this distinction is far from clear and in this paper PKO is used to cover both sorts of deployments.)

However some stressors frequently encountered during PKOs are specific to the peacekeeping role, often related to engaging with the local population in order to enforce or keep the peace. At times military personnel can witness atrocities or can be the targets of hostility from the very populations that they are trying to protect.<sup>4</sup> The so-called 'fog of war' may apply even more to PKOs, reflecting conflicting pressures that may include mission creep, restrictive rules of engagement and unclear mission objectives.<sup>5</sup>

Military peacekeepers may therefore be subject to both physical risks and psychological stressors, both of which may impact upon individual's well-being, readiness and operational effectiveness.<sup>5</sup> Such stressors may not only be associated with PTSD<sup>6,7</sup> but also with other serious psychopathologies such as substance misuse, anxiety disorders and depression.<sup>8,9</sup>

This paper examines the prevalence of PTSD symptoms in personnel deployed on peacekeeping operations. The current study uses a sub sample of peacekeeping troops drawn from the King's military cohort (Unwin *et al*, 1999). Symptoms of PTSD were measured using an accepted diagnostic tool for PTSD in the military (the PCL-M),<sup>10</sup> the general health questionnaire, a measure of psychological distress (GHQ-12)<sup>11</sup> and an alternative measure of post-traumatic distress described in previous work.<sup>12,13</sup>

## Methods

### Participants

Our sample was composed of a randomly selected stratified sample of military personnel who had previously participated in stage one of our original study on the health effects of deploying to the Gulf War.<sup>12</sup> The main follow-up study aimed to determine the outcome of individuals who were significantly symptomatic at baseline and was therefore stratified on the severity of fatigue ascertained at

baseline.<sup>12</sup> The sample included all male veterans with a fatigue score of 9 ( $n=511$ ); a 50% sample of veterans with mid-range fatigue scores of 4–8 ( $n=484$ ); and an approximately one in eight sample of veterans with fatigue scores <4 selected to represent asymptomatic individuals ( $n=250$ ). Additionally all females were selected. The peacekeeping questionnaire was administered with the main study follow up questionnaire first sent out between June 2001 and March 2002.

### Investigations

The postal peacekeeping questionnaire stated clearly that participation was voluntary and the researchers were independent of the MoD. Twenty-one different United Nations PKOs were enquired about including deployments to the former Yugoslavia (including Bosnia and Kosovo), the Arabian Gulf and Cyprus but not Northern Ireland (which is technically supporting the civil power rather than peacekeeping) nor the 1991 Gulf War. Personnel were asked in what manner they deployed (deployment status): with their main unit, with part of their main unit, or as part of another unit (with or without colleagues). All participants were asked to complete the General Health Questionnaire, 12-item version (GHQ-12)<sup>11</sup> when taking part in the follow-up of the main study<sup>13</sup> and the Post Traumatic Stress Disorder Checklist, Military version (PCL-M)<sup>10</sup> was included in the peacekeeping questionnaire. A cut-off of 3 or more was used to decree 'psychiatric caseness' on the GHQ 1–12 and cut-offs of 45 and 50 were used on the PCL-M.<sup>10,14</sup>

An additional measure of post-traumatic distress was sought to avoid giving undue prominence to overt psychiatric symptomology (required in stage one of the baseline study<sup>12</sup> whilst investigating potential 'Gulf War Syndromes'). This variable, 'Post-Traumatic Stress Reaction' (PTSR), was a brief measure that aimed to maximize the response rate. Table 1 demonstrates how PTSR caseness was ascertained. The seven individual items were included within the general physical symptom checklist (53 items) used within the main study.

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### Statistical analyses

Analysis was limited to respondents reporting at least one peacekeeping deployment during the

**Table 1****Definition of PTSR syndrome. Subjects had to endorse at least one symptom in each of the first four categories, plus two of the associated symptoms listed in category 5**

Category	Symptom
1) Intrusive thoughts	<ul style="list-style-type: none"> <li>● Distressing dreams</li> <li>● Feeling distant or cut off from others</li> <li>● Avoiding doing things / situations</li> <li>● Feeling jumpy / easily startled</li> <li>● Sleeping difficulties</li> <li>● Increased sensitivity to noise</li> <li>● Irritability / outbursts of anger</li> <li>● Feeling unrefreshed after sleep</li> <li>● Fatigue</li> <li>● Intolerance to alcohol</li> <li>● Forgetfulness</li> <li>● Loss of concentration</li> <li>● Loss or decrease in appetite</li> <li>● Loss of interest in sex</li> </ul>
2) Avoidance (at least one of)	
3) Arousal (at least one of)	
4) Irritability	
5) Associated behaviours (two or more required)	

study period. Chi squared tests were used for categorical data and the independent samples T-test for continuous data. The Pearson Correlation coefficient was used where appropriate. Data were analysed using SPSS version 11.0.

The final phase of the main study<sup>13</sup> was over-sampled to include a disproportionate number of the most severely fatigue-affected individuals. To account for this the sample was weighted to correct for the fatigue variable when reporting caseness, following convention.

## Results

### Baseline information

Details of the response rates (71%) and patterns of non-response have been described elsewhere.<sup>13</sup> Response rates in the initial sample<sup>12</sup> were typically lower in males, younger participants and the unmarried.

In total, 1245 participants completed the questionnaire although a small number of participants did not endorse at least one PKO ( $n=47$ ). The majority of the sample were male ( $n=1008$ , 84%); of mean age 36 years (min 23 to max 60) and 81% ( $n=964$ ) were still serving in the Armed Forces. The sample consisted of 12% officers ( $n=143$ ) and 75% ( $n=897$ ) were married.

55% ( $n=661$ ) of responders deployed with their main unit compared to 36% ( $n=425$ ) who deployed with only part of their main unit and 21.3% ( $n=225$ ) as part of another unit but with colleagues. Deploying with another unit but without any colleagues was reported by 16.4% ( $n=197$ ).

### Post traumatic stress symptomology

In total, 5.4% ( $n=64$ ) were PTSD cases using the PCL-M cut-off of 44 and 3.6% ( $n=43$ ) were cases using a cut-off of 50. For the GHQ, 29.1% ( $n=357$ ) were cases.

The results revealed that on all measures (GHQ-12, PTSR, the PCL-M 45+ and PCL-M 50+), those who were married or who were officers were significantly less likely to be a case. However there was no effect of gender, age or the number of deployments on caseness, except with the PTSR measure which showed that those personnel who had been on more than two deployments were more likely to be a case ( $\chi=9.92$ ,  $p<0.01$ ). Those who had left the military were also significantly more likely to be a case on every measure (e.g. PCL-M 50+:  $\chi=17.21$ ,  $p<0.001$ ).

### Deployment status and associated rating scale scores

Analysis of deployment status and caseness using PTSR, PCL-M (cut-offs 45+ and 50+), and GHQ caseness did not show any significant differences for most categories (Table 2). There was no clear effect on traumatic stress symptomology in relation to personnel deploying without their main unit or if they deployed without anyone else from their main unit. Personnel who deployed alone with part of another unit were statistically less likely to be a PCL 50+ case ( $n=3$ ). No clear pattern emerged from analysis of the GHQ caseness scores. Personnel that deployed with their complete unit were less likely to be a case (27%) on the

**Table 2**  
Deployment status and rating scales

Status	n (%)	PCL 45+		PCL 50+		PTSR case		GHQ case					
		Cases n (%)	$\chi^2$	P value	Cases n (%)	$\chi^2$	P value	Cases n (%)	$\chi^2$	P value			
Deployed with complete unit	661 (55)	36 (5.5)	0.83	0.36	25 (3.7)	0.12	0.73	38 (5.7)	0.12	0.74	181 (27)	7.01	<0.01**
Part of main unit	428 (36)	21 (4.9)	0.29	0.59	14 (3.3)	0.25	0.62	26 (6.1)	2.6	0.107	135 (31)	5.37	0.02#
Part of another unit with colleagues	256 (21)	12 (4.8)	0.94	0.33	9 (3.4)	0.98	0.32	16 (6.1)	0.22	0.63	78 (30)	1.01	0.32
Part of another unit, on your own	198 (17)	9 (4.4)	0.93	0.33	3 (1.4)	7.01,	0.03*	10 (5.1)	1.6	0.21	55 (28)	0.59	0.46

$\chi^2$  obtained by comparing the reported group to the rest of the sample

\* Less likely to be a case if deployed to another unit on your own

\*\* Less likely to be a GHQ case if deployed with your complete unit

# More likely to be a case if deployed with part of your main unit

GHQ and those deploying with part of their main unit more likely to be a case (31%).

### Sensitivity analysis

Caseness defined by the PCL-M and the PTSR revealed a sensitivity of 58.3% and a specificity of 94.7% whilst for a cut off of 50 on the PCL-M the sensitivity was 61.7% and specificity 93%. The respective positive predictive values for the above cut offs were 59.2% and 43.8%.

### Discussion

The results of this paper clearly show that contrary to the speculations of the UK media, PTSD is an uncommon disorder within the studied cohort of UK military peacekeepers. Our results show that neither age nor gender influenced PTSD caseness rates. However we found that being married or being an officer were both associated with reporting less PTSD symptoms and having left the services was associated with more symptoms. Overall this study found that the PTSD prevalence rate, using the PCL-M, varied from 3.6% to 5.4%. We also found that levels of post traumatic stress were generally independent of deployment status.

### Limitations of this study

Our results were obtained using a postal questionnaire to estimate the true prevalence of PTSD in UK military peacekeepers. Questionnaires are known to overestimate the true rates of PTSD<sup>28</sup> and thus our prevalence findings should be interpreted with caution. However the PCL-M is a well used and well validated instrument which has been widely used to measure PTSD caseness rates in a variety of military and non military populations.<sup>7,10,25</sup>

The study was undertaken in 2001 and examined peacekeeping operations dating as far back as 1991. The results thus have to be interpreted with the possibility of recall bias in mind. Other authors have reported that in military cohorts such as this one, recall bias is likely to inflate rather than diminish rates of psychopathology.<sup>29</sup> Additionally as the cohort was mostly composed of personnel from the Army, caution is required when extrapolating the results to the small numbers of Naval and Royal Air Force personnel who occasionally undertake peacekeeping duties.

In common with other retrospective cohort studies, we cannot determine issues of causality since there is no reliable way of clarifying whether

the psychological distress levels found were a direct result of being deployed on peacekeeping operations or whether other causative factors could explain the results. The results found can, though, be taken as being valid indicators of association.

Our sample was stratified to include the most severely fatigued personnel. However, we must also consider there may be a 'healthy-worker effect' bias introduced, in that personnel that deploy on operations must be fit enough to do so; undergoing treatment for an identified formal mental health problem would preclude deployment. However within the UK military, personnel cannot be under treatment for any form of medical disorder for more than 18 months without being discharged or permanently employed in a non-deployable role. Therefore it is most probable that in our nine-year frame of study, we have included all relevant personnel, including those who may have been treated and returned to full fitness, and thus were deployable on PKOs.

### Comparison with other studies

The prevalence of PTSD in the present study is lower than reported elsewhere for military personnel.<sup>6,7,15</sup> PTSD rates for peacekeeping troops from western countries may vary from 2 to 15%.<sup>16</sup> However, there are few studies of UK peacekeepers for comparison. Baggaley *et al.* studied 382 members of an infantry battalion three years after the first British troops were deployed to the Balkans.<sup>15</sup> Of the 145 subjects who had been deployed to the Balkans at some point during their career, 16% of personnel met caseness criteria compared to 9% of the controls.

Although female gender is considered a risk factor for PTSD in civilian populations,<sup>17</sup> the present study did not show disparity in rates between male and female personnel, though there were limited female participants in the study. This accords with rates of PTSD reported previously for military cohorts<sup>7,18</sup> and supports the view of enhanced resilience among women in the Armed Forces compared to their counterparts in the general population.<sup>18</sup>

The comparatively low prevalence of PTSD in the present study may reflect a true difference in PTSD rates in our sample, it may also be accounted for by other factors including the choice of PTSD rating scale used (other studies have used the Impact of Events Scale<sup>15</sup> or the Composite International Diagnostic Interview (CIDI)<sup>19</sup> to determine PTSD caseness) or by the cultural differences

in reporting of symptoms of distress by UK troops. Non-military literature supports the notion that even in western countries there is variation in how symptoms of distress are reported<sup>20</sup> and there is no reason to think such difference would not apply in military populations. Creamer *et al.*, in a national survey of the Australian population,<sup>21</sup> found PTSD rates to be one third of that found in a national survey of the US population.<sup>22</sup> Both studies used the same instrument.

It is also possible that national variation in the types of operations that are conducted during PKOs, due to both national attitudes towards military risk taking and differing political pressures, may affect PTSD rates. A study of US troops deployed to Somalia showed that 8% met diagnostic criteria for PTSD.<sup>7</sup> Undeniably, a US soldier operating in Somalia in 1994 would have been subject to very different stressors to those experienced by British soldiers in the Balkans in late 1999. National differences in training, both in terms of variety and intensity for peacekeepers may also explain the variation in prevalence rates, as effective training is known to protect against psychological injury.<sup>23</sup>

### Deployment status

That deployment status (who subjects deployed with) was not found to be linked to PTSD prevalence rates is at odds with Ismail *et al.* who found increased levels of distress in combat troops who deployed without their main unit.<sup>24</sup> Ismail's study had specifically examined personnel deployed to the Gulf War of 1991, which only lasted for four days. While previous studies have shown that most soldiers gain social support from their peers,<sup>25</sup> the relatively short operational deployment in the Gulf War of 1991 may have been an insufficient period for studied personnel to integrate with units that they were attached to. Without sufficient time to form sufficiently strong interpersonal bonds with their attached unit a socially supportive, and therefore psychologically protective, environment may not have developed. In contrast peacekeeping deployments usually last for six months, which is likely to be sufficient for attached personnel to share sufficient experiences with the main unit allowing 'protective' social integration to occur.

It is also possible that the operational tempo (the number of hours spent on active patrolling or other potentially dangerous duties) may be less intense in PKOs than during war fighting operations. Indeed, Ismail's study failed to find the same

increase in distress symptoms for non-combat troops as for combat troops, a finding which supports this idea. Further studies are needed to clarify effects of deployment status as during the recent Iraq War, allied armies made considerable use of reserve forces many of whom would have been deployed as attached rather than whole units.

### Measures of PTS symptomology

This study has found that significant correlations between the different measures of post traumatic distress used. This lends credence to our use of the PTSR measure as a simple and relatively unobtrusive indicator of post traumatic distress. Unsurprisingly there was also a significant correlation between the general measure of distress used (the GHQ-12) and the various indicators of post traumatic distress; similar correlations have been found in other studies of UK service personnel.<sup>26</sup> However there were differences in the prevalence of PTSD found using the different measures and the kappa scores were at best moderate.<sup>27</sup> Therefore, although it seems clear that the PTSR measure is yet another valid measure of post traumatic distress, it may measure a different construct of psychological distress from other well validated measures such as the PCL-M.

### Conclusion

Keeping the peace can have serious psychological consequences for a small proportion of the UK service personnel who deploy on such operations. Although PTSD was an uncommon problem in the studied sample it continues to attract considerable political and media interest. In part this is because, for the UK military, peacekeeping operations are becoming more common whilst conventional war fighting operations become less so. The psychological consequences of such operations pose a real risk management issue for military forces from both a psychological health and a media operations viewpoint. How best to mitigate the effects of psychological stressors encountered on such operations, remains a challenge for military forces worldwide.

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