The health of UK civilians deployed to Iraq

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Background: Modern military operations have incorporated deployed civilians in a variety of roles (e.g. diplomats, private security staff). Many of these roles expose individuals to potentially dangerous or traumatic events. Evidence has shown that such exposures can cause psychological health problems in military personnel. It is likely that the same would be seen among civilians working in such environments. There is however limited research into the health of civilians deployed to war zones. This study compared health outcomes and related behaviours among UK regular and reserve Army personnel with UK civilian personnel deployed in direct support of the UK military in Iraq. Methods: The study sample comprised of 159 Ministry of Defence civilians, 1542 Army regulars and 408 Army reservists, all of whom served in non-combat roles. Data were gathered by questionnaires which asked about deployment experiences, lifestyle factors and health outcomes [i.e. post-traumatic stress disorder (PTSD), general health, multiple physical symptoms and alcohol use]. Results: Fewer deployed UK civilians smoked than regular Army personnel (adjusted OR 0.83 95% CI 0.70–0.98). UK civilians had better overall health and were less likely to report multiple physical symptoms compared with reservists (adjusted ORs 0.64 95% CI 0.44–0.93 and 0.60 95% CI 0.39–0.93, respectively). Conclusions: Overall, the psychological health of deployed civilians appears to be better than that of Army personnel deployed in non-combat roles. Civilians are also less likely to engage in some risky behaviours.

Introduction

The UK Ministry of Defence (MoD) deploys civilian personnel in direct support of overseas military operations, in roles such as technicians, scientists, media and political advisors. Some roles may involve exposure to potentially traumatic incidents. It is well known that such experiences can cause psychological health problems in military personnel. While studies of journalists, diplomats and technicians, scientists, media and political advisors. Some roles may involve exposure to potentially traumatic incidents. It is well known that such experiences can cause psychological health problems in military personnel. While studies of journalists, diplomats and military personnel. It is likely that the same would be seen among civilians working in such environments. There is however limited research into the health of civilians deployed to war zones. This study compared health outcomes and related behaviours among UK regular and reserve Army personnel with UK civilian personnel deployed in direct support of the UK military in Iraq.

Methods

Participants

This study used data from the first phase of a cohort study of the health and wellbeing of UK military personnel in service at the time of the 2003 Iraq War (Operation TELIC—the codename for British operations in Iraq). About 4722 regular and reserve personnel deployed on TELIC 1 (the initial war-fighting phase of the 2003 Iraq War from January to April 2003), and 5550 regular and reserve personnel not deployed on TELIC 1, completed a survey which explored military and deployment experiences, lifestyle factors and health outcomes.

A shorter non-military version of the questionnaire was mailed to 284 MoD civilians who deployed to Iraq between January 2003 and July 2005. The list of deployed civilians was generated by the MoD and made available to the research team.

Measures used

Socio-demographic characteristics

Occupational social class was assigned to civilians based on their reported occupation on deployment using the Standard Occupational Classification. For Army personnel rank was used to assign social class.
In-theatre characteristics
Participants were asked whether, during their deployment, they ever: thought they might be killed; saw personnel wounded or killed; handled bodies; gave aid to the wounded; came under small arms fire; came under mortar/artillery fire; experienced a landmine strike or experienced hostility from civilians.13

Health behaviours
Alcohol consumption potentially harmful to health was defined as having a score of ≥16 on the 10-item Alcohol Use Disorders Identification Test (AUDIT).14 Risky driving was defined as sometimes, seldom or never wearing a seatbelt; or driving >10 miles per hour (mph) above the limit [10 mph is equivalent to 16 kilometres per hour (kph)] in a built-up area, or >20 mph above the limit on a motorway (20 mph is equivalent to 32 kph). Questions on seatbelt usage and speeding were adapted from the study by Bell et al.16,17 Smoking status was defined as current smoker, with responder answering yes or no.

Health outcomes
The 12-item General Health Questionnaire (GHQ-12) was used to measure symptoms of common mental disorder over the past month.8,10,15 The 17-item National Centre for Post-Traumatic Stress Disorder Checklist (PCL-C) was used to measure symptoms of PTSD.20 General well-being was assessed using the general health-perception question of the 36-item Short Form health survey (SF-36).21,22 The cut-off values for caseness on the mental health measures was a score of 4 or more for the GHQ-12; a score of 50 or more for the PCL-C and a self-description of one’s health as poor or fair on the SF-36.3,18,21 A checklist of 53 symptoms was used to report physical symptoms. A cut off of 18 or more symptoms represented caseness of multiple physical symptoms.3

Sample
To maximize response rate, surveys were mailed out at least 3 times. About 159 out of 284 MoD civilians (56%) completed the survey and 5 (2%) declined to participate. About 120 MOD civilians (42%) did not respond. About 6603 (59%) Army personnel completed the questionnaire.3 Deployed MoD civilians were compared separately to both deployed Army regular personnel and deployed Army reserve personnel. Only Army personnel who served in wholly non-combat roles [termed combat service support (CSS)] were included for comparison, as CSS roles more closely reflect the roles undertaken by MoD civilians. Army personnel deployed in these roles have responsibilities for general support of operations, with a primarily logistical or combat enabling function (e.g. engineers, military police and administrative personnel). We also excluded medical personnel from the current study as these individuals experience increased exposure to the injury or deaths of others.23,24 These exclusions led to comparisons of 159 MoD civilians with 1542 regular and 408 reserve Army CSS personnel.

Data analysis
Analyses were conducted in STATA 10 (Stata Corporation, College Station, TX). Test statistics were generated to examine socio-demographic differences (t-tests were used for continuous and chi²-tests for categorical data). Multivariable logistic regression analyses were performed to compare the demographic and in-theatre characteristics, health behaviours and health outcomes of deployed MoD civilians and Army CSS personnel. Odds ratios with 95% confidence intervals (CI), and two-sided P values were generated; statistical significance was defined as P<0.05. Analyses were adjusted for phase of TELIC, age (in years), sex and educational status. Odds ratios were not generated for comparison of deployment likelihood of civilian vs. regulars or reserves as these differences are known and reflect changes in operational mission and deployment policy.

Results
Compared with regular Army CSS personnel, civilians were older, more likely to be female, to have attained higher educational qualifications and to be of a higher social class (table 1). Similar differences were observed between civilians and Army CSS reserve personnel. The roles MoD civilians had while deployed were primarily fire fighters, police officers, administrators, researchers and policy advisors (data not shown).

Of the MoD civilians, 20.1% deployed on TELIC 1, with the remaining 70.9% deploying on subsequent TELIC operations. About 77.7% of regulars and 82.1% of reservists deployed on TELIC 1, with the remaining 22.3% regulars and 17.9% reservists deploying on subsequent TELIC operations (table 2). Adjusting for demographic differences and for stage of TELIC deployment, civilians were more likely to report coming under mortar/artillery fire and less likely to report experiencing hostility from local civilians compared with Army regulars and reservists. The prevalence of all health outcomes and risky behaviours were lower among MOD civilians than both Army regulars and reservists (table 3). Once socio-demographic differences were accounted for, only smoking remained statistically significantly lower among civilians compared with regulars (adjusted OR 0.83 95% CI 0.70–0.98); while poorer general health and multiple physical symptom levels were lower among civilians compared with reservists (adjusted ORs 0.64 95% CI 0.44–0.93 and 0.60 95% CI 0.39–0.93, respectively). Civilians reported fewer multiple physical symptoms compared with regulars (adjusted ORs 0.77 95% CI 0.59–1.00) and less heavy drinking than reservists (adjusted ORs 0.59 95% CI 0.34–1.01), however, these results are of borderline statistical significance. Adjustment for traumatic experiences had no notable effect on the results (data available from authors).

Discussion
The main finding in this study is that for mental health outcomes there was no statistically significant difference between deployed MoD civilians and their armed forces counterparts. MoD civilians were though less likely to report having multiple physical symptoms and poor/fair general health compared with their reservist colleagues. MoD civilians were also less likely to be smokers than their regular colleagues. MoD deployed civilians also reported differences in deployment experiences compared with their Army colleagues (regular and reserve), perceiving significantly higher levels of indirect fire and less hostility from local civilians.

Comparison with other studies
Feinstein and colleagues work has demonstrated that war journalists have higher rates of psychiatric difficulties and are less likely to receive treatment than non-war journalists.3 Journalists exposed to higher levels of work-related trauma (e.g. witnessing mass casualties, child abuse/cruelty, murder) have been shown to be significantly more likely to suffer higher levels of PTSD symptoms and trauma-related guilt cognitions than journalists exposed to lower levels of trauma.25 Psychiatric morbidity was higher in war journalists than controls working in war zones found 20.0% reached cut off for depression, 17.0% for high alcohol intake and 33.3% for PTSD. A different study in 2007 found that 24.0% of employees of a defence
illness no clinically significant level of mental illness was detected
often exposed to stressors which can increase the risk of mental
UK study of contractors demonstrated that while contractors are
alcohol abuse (10.0%) than MoD civilians. Rates of poor physical
levels of combat exposure, deployment length and perceived pre-
origin and role, which was thought to be attributable to varying
rates of psychiatric morbidity varied depending on country of

While rates of depression were similar to MoD civilians in this
reason. Similar high levels of subjective perception of threat were
demonstrated in a study of 404 US DACs deployed to Afghanistan or
Iraq, with over 2/3 experiencing a sense of threat during deployment
during deployment and over 1/3 feeling their life was threatened at least a few times a
month. While there was no significant difference between civilians and military personal reporting they thought they were going to die, MoD civilians were more likely to report coming under indirect fire than their Armed Forces colleagues. It is, however, unlikely that civilians experienced more indirect fire than their Army colleagues. This result is likely to due to recall bias as civilians who are unfamiliar with deployment and combat are more likely to report exposure and less likely to be able to make an objective assessment of danger than their regular and reserve colleagues. Reservists have been shown to report more traumatic experiences on deployment than their regular counterparts, likely for the same reason. Similar high levels of subjective perception of threat were demonstrated in a study of 404 US DACs deployed to Afghanistan or Iraq, with over 2/3 experiencing a sense of threat during deployment and over 1/3 feeling their life was threatened at least a few times a month.

In this study, reservists were more likely than civilians to report fair/poor health and to report more physical symptoms. Research shows that reservists who deployed on TELIC operations reported more ill-health than their regular counterparts. This has been attributed to their perceived higher exposure to traumatic experiences and difficulties in returning from deployment. In regards to preparation and support for deployment civilians mobilised in this

### Table 1 Socio-demographic characteristics for MoD civilians, Army regulars and Army reserves [Means (and standard deviations (SD)), number (n) [and percentage (%)] and test statistics (t-test or chi²), degrees of freedom (df) and P values]

<table>
<thead>
<tr>
<th></th>
<th>Civilians (n=159)</th>
<th>Regulars (n=1542)</th>
<th>Reserve (n=408)</th>
<th>Civilians vs. regulars</th>
<th>Civilians vs. reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>41.54 (8.61)</td>
<td>31.88 (6.98)</td>
<td>38.17 (6.97)</td>
<td>t-test statistic, df, P</td>
<td>t-test statistic, df, P</td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td>values</td>
<td>values</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td>-16.14, 1697, &lt;0.0001</td>
<td>-4.80, 563, &lt;0.0001</td>
</tr>
<tr>
<td>Male</td>
<td>124 (78.0)</td>
<td>1416 (91.8)</td>
<td>366 (89.7)</td>
<td>32.23, 1, &lt;0.0001</td>
<td>13.39, 1, &lt;0.0001</td>
</tr>
<tr>
<td>Female</td>
<td>35 (22.0)</td>
<td>126 (8.2)</td>
<td>42 (10.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/co-habiting</td>
<td>118 (74.7)</td>
<td>1167 (76.0)</td>
<td>299 (73.8)</td>
<td>0.16, 2, 0.923</td>
<td>4.19, 2, 0.123</td>
</tr>
<tr>
<td>Single</td>
<td>29 (18.4)</td>
<td>272 (17.7)</td>
<td>57 (14.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced/separated/widowed</td>
<td>11 (7.0)</td>
<td>97 (6.3)</td>
<td>49 (12.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational attainment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No qualifications</td>
<td>12 (8.2)</td>
<td>130 (9.0)</td>
<td>42 (11.5)</td>
<td>114.98, 3, &lt;0.0001</td>
<td>32.83, 3, &lt;0.0001</td>
</tr>
<tr>
<td>O-levels or equivalent</td>
<td>38 (26.0)</td>
<td>705 (49.0)</td>
<td>148 (40.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-levels or equivalent</td>
<td>30 (20.6)</td>
<td>430 (29.9)</td>
<td>101 (27.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>66 (45.2)</td>
<td>174 (12.1)</td>
<td>74 (20.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I–II</td>
<td>86 (57.3)</td>
<td>213 (13.9)</td>
<td>45 (11.1)</td>
<td>183.10, 2, &lt;0.0001</td>
<td>136.76, 2, &lt;0.0001</td>
</tr>
<tr>
<td>III</td>
<td>64 (42.7)</td>
<td>1086 (71.0)</td>
<td>310 (76.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>0 (0.0)</td>
<td>230 (15.0)</td>
<td>51 (12.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p may not add up to denominator due to missing data.

### Table 2 In-theatre characteristics for MoD civilians, Army regulars and Army reserves [Number (n) [and percentage (%)]; adjusted odds ratios (OR); 95% confidence intervals (CI)]

<table>
<thead>
<tr>
<th></th>
<th>Civilians (n=159)</th>
<th>Regulars (n=1542)</th>
<th>Reserve (n=408)</th>
<th>Adjusted* OR (95% CI)</th>
<th>Adjusted* OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase of TELIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TELIC 1</td>
<td>32 (20.1)</td>
<td>1198 (77.7)</td>
<td>335 (82.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TELIC 2+</td>
<td>127 (79.9)</td>
<td>344 (22.3)</td>
<td>73 (17.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thought you might be killed</td>
<td>102 (64.6)</td>
<td>924 (60.4)</td>
<td>269 (67.1)</td>
<td>1.05 (0.91–1.21)</td>
<td>1.04 (0.79–1.35)</td>
</tr>
<tr>
<td>Saw personnel wounded or killed</td>
<td>51 (32.1)</td>
<td>600 (39.0)</td>
<td>158 (38.8)</td>
<td>1.05 (0.91–1.22)</td>
<td>1.02 (0.78–1.33)</td>
</tr>
<tr>
<td>Handled bodies</td>
<td>12 (7.6)</td>
<td>109 (7.1)</td>
<td>20 (4.9)</td>
<td>1.07 (0.83–1.39)</td>
<td>1.13 (0.68–1.86)</td>
</tr>
<tr>
<td>Gave aid to the wounded</td>
<td>15 (9.4)</td>
<td>153 (9.9)</td>
<td>35 (8.6)</td>
<td>1.10 (0.88–1.38)</td>
<td>0.84 (0.55–1.28)</td>
</tr>
<tr>
<td>Came under small arms fire</td>
<td>51 (32.1)</td>
<td>522 (33.9)</td>
<td>129 (31.7)</td>
<td>1.10 (0.95–1.27)</td>
<td>1.04 (0.79–1.37)</td>
</tr>
<tr>
<td>Came under mortar/artillery fire</td>
<td>118 (74.2)</td>
<td>830 (53.9)</td>
<td>246 (60.4)</td>
<td>1.47 (1.26–1.70)</td>
<td>1.90 (1.42–2.53)</td>
</tr>
<tr>
<td>Experienced a landmine strike</td>
<td>1 (0.6)</td>
<td>66 (4.3)</td>
<td>15 (3.7)</td>
<td>0.65 (0.32–1.29)</td>
<td>0.53 (0.17–1.67)</td>
</tr>
<tr>
<td>Experienced hostility from civilians</td>
<td>49 (30.8)</td>
<td>791 (51.4)</td>
<td>190 (46.7)</td>
<td>0.73 (0.63–0.85)</td>
<td>0.66 (0.51–0.87)</td>
</tr>
</tbody>
</table>

*Adjusted for phase of TELIC, age (in years), sex and educational status.

contractor showed signs of depression or PTSD. Conversely a UK study of contractors demonstrated that while contractors are often exposed to stressors which can increase the risk of mental illness no clinically significant level of mental illness was detected and multiple protective factors (camaraderie, having a sense of personal strength, leave) were demonstrated. In a study on 660 private contractors conducted by the RAND corporation (Research and Development, a non-profit think tank that undertakes research on US armed forces) 25.0% met criteria for PTSD, 18.0% for depression and 50.0% for alcohol misuse. While rates of depression were similar to MoD civilians in this study rates of alcohol misuse and PTSD were considerably higher, although again different tools were used. The RAND study found that rates of psychiatric morbidity varied depending on country of origin and role, which was thought to be attributable to varying levels of combat exposure, deployment length and perceived preparedness. Even after taking this into account UK contractors in the RAND study demonstrated higher rates of PTSD (4–7%) and alcohol abuse (10.0%) than MoD civilians. Rates of poor physical health were similar between contractors and MoD civilians, with 11.0% of contractors rating their health as fair/poor, although 16.0% of UK contractors reported physical health problems attributed to deployment compared with 9.5% of MoD civilians.
study had the same pre-operation briefings and preparation as reservists and also had a dedicated doctor who could see them when they de-mobilised. While on deployment Civilians also had access to a Field Mental Health Team. At the time of this study civilians were not offered decompression but this has subsequently been implemented.

**Strengths and limitations**

Data from civilians were collected concurrently with the military data collection. Use of similar questionnaire measures allowed direct comparisons to be made. The response rate of 56% among civilian participants is similar to that achieved among Army personnel (59%). The small number of civilians studied meant that some comparisons performed may be inadequately powered to detect significant differences. All data analysed in this study were derived from self-reported questionnaires, often completed sometime after deployment which raises the possibility of recall bias.30

**Conclusion**

This study investigated the health of UK civilians deployed in the Iraq War and compared them to Army Combat Service Support personnel. The psychological health of deployed civilians appears to be, in general, relatively similar to that of Army personnel in non-combat roles. However, MoD civilians were less likely to report having multiple physical symptoms and poor/fair general health than reservists and were less likely than regular Army CSS personnel to be smokers. The UK Armed Forces are currently undergoing changes in line with Future Force 2020.31 MoD civilians and contractors are a recognised and integral part of the Whole Force.31 They are likely to have an increasing role in future UK deployments and operations overseas. This article highlights the health and wellbeing of deployed civilians to date and further research is necessary to monitor this as the Armed Forces undergo further changes.

**Acknowledgements**

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**Conflicts of interest**

S.W. is Honorary Civilian Advisor in Psychiatry to the British Army (unpaid) and a Trustee of the charity, Combat Stress. N.J. is a full-time reserve member of Defence Medical Services seconded to King’s College London; although paid by the MoD, he was not directed in any way by the MoD in relation to this article. P.C. is a member of Dstl, and was formerly seconded to King’s College London on a part-time basis. All other authors declare they have no conflicts of interest.

**Key points**

- Deployed civilians have similar health outcomes to non-combat Army personnel and better outcomes than reservists.
- Deployed civilians are more likely to have healthier lifestyle habits than armed forces personnel.
- With reductions in regular armed forces personnel there will be an increasing role for civilian and reservists deployment.

This article highlights the health and wellbeing of deployed civilians to date.

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