Medically unexplained symptoms in military personnel

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Abstract
The UK Armed Forces comprise some 190,000 personnel who have most of their healthcare provided ‘in-house’ by dedicated medical personnel and facilities. Historically, military personnel deployed on operational duties have been affected by a variety of constellations of medically unexplained symptoms associated with their service. The most recent of these is Gulf War syndrome, a phrase coined after the 1991 Gulf War. This article examines the many hypotheses that have been put forward about the origins of the concept and gives an overview of studies that have attempted to explain the lingering health effects associated with Gulf service. It also examines the attempts that have been made to treat the condition and considers the implications for current psychiatric practice.

Keywords depleted uranium; Gulf War syndrome; Iraq War; medically unexplained symptoms; military health; post-traumatic stress disorder; vaccinations

Introduction
The UK Armed Forces number approximately 190,000 uniformed personnel, comprising about 100,000 Army personnel, 50,000 Royal Air Force personnel, and 40,000 in the Royal Navy (including the Royal Marines Commandos). Military personnel are served by their own medical service which, much like the National Health Service (NHS), comprises a multidisciplinary team of health providers including primary care and secondary care services. Since 2004, when the Duchess of Kent’s Psychiatric Hospital – the last dedicated military hospital – closed, most of the military secondary care personnel have worked alongside NHS colleagues in Ministry of Defence Hospital Units, based in NHS hospitals around the country. However, Defence Mental Health Services (DMHS) work out of one of 15 departments of community mental health within the UK, with further units based in major overseas bases.

Although the range of psychopathology seen within the DMHS is broadly similar to that in NHS psychiatric clinics, there is a dearth of patients with serious mental illness, such as schizophrenia, because those with such illnesses are unlikely to be able to continue in service. In addition, compared with the NHS, much of the mental ill-health seen by military care services is less severe and presents different challenges. Military personnel are expected to be physically and psychologically robust, and to have a high tolerance for adversity whether in the UK, overseas, or deployed on operations. Tolerance for poor performance is low within the services, and therefore personnel with relatively minor illnesses (e.g. adjustment disorders) are assessed, and if necessary treated, at a much earlier stage than is the case outside the military environment.

Medically unexplained symptoms
Although medically unexplained physical symptoms are common in the general population,1 some clusters of unexplained symptoms have been associated with military service. These conditions include shell shock, disordered action of the heart, effort syndrome, the effects of Agent Orange,2,3 and, recently, but no less controversially, Gulf War syndrome (GWS). To understand better the complex interplay of health attribution and the physical ill-health of military personnel it is helpful to examine the issue of GWS in more detail; this requires a brief review of the history of the conflict.

The 1991 Gulf War
In 1991, a coalition of troops liberated Kuwait from the control of Iraqi forces. The fighting phase of the 1991 conflict was short, and associated with minimal casualties to coalition forces. At the time, the conflict was seen to be a medical success story, not just in the low number of battle casualties, but also for the minimal burden of heat-related or infectious diseases – traditionally a major source of morbidity and mortality for service personnel in operations in testing environments.3

However, within a few months of the war, media reports began to emerge, first, of an apparent cluster of birth defects in the children of some Gulf veterans, and later of unexplained health symptoms in other, previously fit, Gulf veterans. These reports began in the USA, but gradually spread to nearly all the countries that had taken part in the coalition against Saddam Hussein, with the possible exception of Saudi Arabia. The response from the coalition governments was to invest in epidemiological research studies that aimed to identify whether this was indeed a serious problem and, if so, what the cause might be. Interestingly, it is unclear exactly when, or by whom, the term Gulf War syndrome was coined to describe the cluster of physical symptoms that make up the condition.
The first studies
Initially, clinics were set up in the USA and the UK to enable Gulf veterans to undergo a comprehensive health assessment; the UK clinic was called the Gulf War Veteran’s Medical Assessment Programme and is still in existence. In all, more than 100,000 veterans attended these programmes, 90% in the USA.6,5 It is important to note that those attending the clinics were not a random sample of the population, and it is therefore necessary to exercise caution when drawing conclusions from the data. However, it should have been possible to detect any major increase in a well-recognized illness or disease, or to identify an emergent condition, but none was identified, and the largest diagnostic category was medically unexplained symptoms and syndromes.6,7

Although claims have been made that Gulf War veterans suffered increased mortality rates, detailed analyses of the USA and UK Gulf cohorts have not confirmed this, apart from a rise in the rates of accidental death (USA and UK) and suicide (USA only).6 This observation has often been made in the aftermath of conflicts and is possibly linked to an increase in risk-taking behaviour. Furthermore, again contrary to media speculation, there has been no increase in cancer rates amongst UK Gulf War veterans.5

The Gulf War health effect
The first definitively increased rates of symptom reporting in a Gulf cohort were identified by the Iowa Persian Gulf Study Group.10 Rates for conditions such as chronic fatigue syndrome, depression, and post-traumatic stress disorder (PTSD) were all raised. However, it is important to recognize that all such conditions are based on self-reported symptoms rather than objective clinical markers.

The first systematic UK epidemiological study compared data from 4246 randomly selected Gulf War veterans from all three UK Armed Services, with similarly sized cohorts of non-deployed personnel (called the Era group) and an active duty control group that had served, some years later, in the Bosnian conflict.11 This questionnaire-based study found that UK Gulf veterans were two to three times more likely than either the Era or the Bosnian group to report each of the 50 somatic symptoms that were enquired about (Figure 1).9,12,13 Furthermore, although the Gulf cohort described their health as being poor, their physical functioning was only slightly different – and still above expected non-military norms.

Since the original study,9,10 the findings have been replicated.14 Numerous studies have found that those deployed to the Gulf consistently report poorer health perception and quality of life than military personnel not deployed.15,16

However, some authors have identified abnormal physical findings in Gulf veterans, the most serious being a large US study that reported 40 cases of amyotrophic lateral sclerosis (ALS), a form of motor neuron disease.17 However, the excess may be due to an ascertainment bias, as greater efforts may have been made to find cases in Gulf veterans than in controls. In addition, the tiny number of ALS cases cannot explain the large number with GWS and, furthermore, there has been no increase in mortality from neurological disease in Gulf veterans, which would be expected as ALS is ultimately fatal.

Psychological sequelae
A number of studies of Gulf War veterans have found that many fulfilled the diagnostic criteria for clinical depression and anxiety syndromes, as well as for chronic fatigue syndrome, multiple chemical sensitivity, and irritable bowel syndrome. Therefore, it is perhaps unsurprising that expert committees have concluded that in Gulf War veterans there is an association between deployment and a range of psychiatric and behavioural disorders.18 However, more detailed studies have found that, although the rate of true psychiatric disorders doubled in Gulf veterans, the absolute burden as a result of formal psychiatric disorder remains low. For example, only 3% of UK personnel who deployed to the Gulf met reported symptoms of probable PTSD.19 Thus, although personnel who went to the Gulf were twice as likely to have PTSD, most veterans – even those with increased levels of physical symptoms – did not suffer from mental health disorders. Therefore, psychiatric disorders per se cannot wholly account for the Gulf War health effect.

Limitations of the epidemiological studies
It is important to recognize that, although epidemiological methods have provided a considerable amount of information on GWS, they do have their limitations. For instance, the findings of self-report measures tend to correlate poorly with those on clinical physical examination.20 In addition, studies of ‘medically unexplained syndromes’, which are characterized by symptoms similar to those of GWS, in non-military community samples find less than 1 in 5 to have a discrete biomedical explanation.21 Furthermore, a variety of biases are likely to make the use of
self-report questionnaire-based studies less than ideal, especially as many were carried out years after the end of the conflict.

How valid is the term ‘Gulf War syndrome’?

For GWS to be a valid term, it must be possible to identify a discrete constellation of symptoms and signs specifically related only to service in the Gulf; however, this is not the case. In fact, the symptoms experienced by Gulf War veterans also occur elsewhere in personnel, military and civilian, who have never been to the Gulf.

Notwithstanding the above point, there is incontrovertible evidence that substantial numbers of veterans labelled as suffering from GWS do exist, that they have multiple and disabling problems, and substantially reduced levels of functioning. Although estimates vary, it appears that a Gulf War health effect afflicts 20–30% of those who deployed to the Gulf. Furthermore, the reporting of symptoms does not seem, in the main, to be due to attempts to procure financial rewards. Perhaps most importantly, despite many of those affected claiming a War Pension (which does not require a formal diagnosis), research evidence suggests that most Gulf veterans who were ill in 1996 remained so in 2001.

Theories about the origins of a possible Gulf War syndrome

In general, the associations of illness in Gulf War veterans tend to be non-specific: those who suffer with GWS symptoms are not more likely to be in a defined service (Navy, Army, or Royal Air Force) or to have had a particular role during their Gulf service (e.g. combat). However, numerous non-Gulf-specific associations are found to be linked with poor health, including military rank (a proxy for educational status) and other personal attributes such as fortitude, leadership, and good decision-making, all of which increase the likelihood of promotion.

Numerous agents have been implicated as a possible cause of GWS (Table 1), but, with few exceptions, these claims have not been substantiated. For example, depleted uranium (DU), used in munitions such as tank shells, is often cited as a cause of Gulf-related ill-health. However, role in theatre was not linked with GWS symptoms and only personnel working in or around armoured vehicles would have had contact with DU. A study carried out in veterans of the more recent Iraq conflict (2003 to date) examined urinary levels of DU isotope (indicating plausible exposure to DU) in troops with different levels of exposure to potential sources of DU. The findings showed that, in spite of some personnel reporting exposure to DU, no evidence of the urinary DU isotope was found. Another contender is pyridostigmine bromide (PB) tablets, used as a prophylactic against the possible effects of nerve agent chemical weapons. However, of three Canadian Navy ships deployed to the Gulf, only two issued PB prophylaxis, yet the rate of illness was the same for all three.

Other possible causative factors such as organophosphate pesticides, smoke from oil-well fires, accidental exposure to organophosphate-based nerve agents, or the vaccinations administered to protect troops from disease and possible biological weapon use have also been well investigated. Exposure to them, and numerous other agents, has not been found to be linked to the Gulf War health effect. Although some initial evidence suggested a link between the administration of large numbers of vaccines and ill-health, more recent data found that the association could be explained by recall bias.

So what might be the cause of Gulf War syndrome?

Research conducted from the middle of the 19th century, when reasonable medical records were first kept, suggests that there have been frequent historical reports of military veterans suffering from conditions similar to GWS. Although they have had many labels, such as ‘soldier’s heart’, ‘shell shock’, or, more recently, ‘Agent Orange syndrome’, their existence appears to be a ‘side effect’ of sending personnel to war and not due to any environmental causative agent. In addition, although more Gulf veterans report the symptoms of probable PTSD, this finding does not explain the overall increase in ill-health. However, the issue of trust is an important one, and there are similarities between the experiences of Gulf War veterans and those of Vietnam veterans.

Treatment and prognosis

Although numerous treatments have been tried for GWS, there is little conclusive evidence that any has been particularly effective. A US study employing a cognitive behavioural therapy approach similar to that used for medically unexplained symptoms such as chronic fatigue syndrome found only a modest improvement, at best. In addition, a 4-year follow-up of the King’s cohort showed that those who believed they had GWS remained unwell, although, interestingly, the health gap between the Gulf and Era groups appeared to be narrowing.

Implications for mental health providers

The issue of medically unexplained symptoms in military personnel is a pertinent one, considering the ongoing operations in both Iraq and Afghanistan. Although there is no evidence, as yet, to suggest that there will be an Iraq or Afghanistan syndrome, history would suggest that it is best to keep an open mind on the issue.

What is clear is that, within military populations, there is a potential for substantial numbers of personnel to suffer from potentially debilitating, apparently physical, disorders as a result of their service, even though no physical explanation for the
somatic symptoms can be found. However, once an individual has come to believe that they are unwell, probably as a result of a complex interplay of social and psychological factors, it appears to be very difficult to treat those so affected.

**REFERENCES**