ORIGINAL ARTICLE

Medical downgrading, self-perception of health, and psychological symptoms in the British Armed Forces

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Objective: To investigate the contribution of psychological symptoms to limited employability for medical reasons in the British Armed Forces.

Methods: A sample of 4500 military personnel was randomly selected to receive either a full or an abridged questionnaire. The questionnaires asked whether the participant was medically downgraded and if yes, the reason for it. The full questionnaire included the General Health Questionnaire-12 (GHQ-12), the post-traumatic stress disorder (PTSD) checklist, 15 symptoms to assess somatisation, and selected items of the quality of life SF-36 questionnaire. The abridged questionnaire included the GHQ-4, a 14 item PTSD checklist, five symptoms, and the item on self-perception of health from the SF-36. Subjects above a threshold score for GHQ, PTSD, and symptoms were considered to have psychological symptoms.

Results: 12.4% of the participants were medically downgraded. The majority (70.4%) had social or work limitations. Medically downgraded personnel had higher odds ratios in comparison to non-downgraded personnel for psychological distress 1.84 (95% CI 1.43 to 2.37), PTSD 3.06 (95% CI 1.82 to 5.15), and number of symptoms 2.37 (95% CI 2.37 1.62 to 3.47). GHQ, PTSD, and symptoms scores were mainly, but not exclusively, related to chronic physical injury.

Conclusions: Psychological symptoms are common among medically downgraded personnel. Although the mechanisms involved are unclear, tackling issues of psychological symptoms among these subjects could contribute to faster restitution to full employability in the Armed Forces.

At least 8% of the personnel in the British Armed Forces are medically downgraded at any given time with higher rates reported for the Territorial Army (TA).[1] A medical reason is provided in nearly 17% of all discharges from the Armed Forces.[2] The rates of medical downgrading vary according to the type of function and service. Medical downgrading and discharges are a serious drain of scarce resources, have considerable impact upon the military's operational capability and may have consequences in organisational issues and issues of morale for the Armed Forces.

The literature concerning medical downgrading is scant. Most reports are of a descriptive nature. This is a neglected area of research, maybe because the rules concerning medical downgrading are open to interpretation by military doctors and therefore the process is likely to be subject to inherent variability. Although there are military publications, which purport to define a common standard to the process, there is no formal audit procedure to ensure that the standard is adhered to.[3] This is not just because of inability to regulate the Defence Medical Services personnel but also because the PULHHEEMS procedure, used to assess medical fitness in the British Armed Forces, relies on clinicians making an assessment of occupational function based not just on a medical diagnosis but also on the resulting degree of functional limitation. The assessment is also likely to be influenced by the patient's view of his or her own problem.

The system was developed in the Canadian Armed Forces soon after the Second World War. PULHHEEMS is an acronym which denotes the medical function of aspects of health: Physical, Upper limbs, Lower limbs, Hearing (left and right ear), Eyesight (left and right eye), Mental capacity, and emotional Stability. The PULHHEEMS assessment is translated into employment standards.[3 4] In brief the categories are fit, fit (but permanently medically boarded and accepted restriction), unfit and usually receiving treatment to improve, and below standard-discharge. Its equivalent in the US—PULHES—is also viewed with some degree of scepticism. This might contribute to the high level of errors in the entry medical assessments.[1] The frequency and detail of the process may vary from being very stringent and frequent in highly specialised functions such as pilots, to less so for supporting functions. To date studies have looked at the wastage of highly specialised personnel,[5] the numbers of deployed personnel whose employability does not match the level of fitness required for operational roles during deployment[6] and false negatives of medical fitness at the recruitment stage.[2]

We are unaware of any studies assessing the self-perception of health and psychological symptoms among those who are medically downgraded in the Armed Forces. Poor self-perception of health and a high prevalence of psychological symptoms and somatisation can impact on the level of preparedness of the Armed Forces and impact on the length of time a person remains in a lower medical category than that needed for full employability. Downgrading may itself impact on wellbeing if service personnel were to develop a sense of unsuitability and consequent low morale.

The purpose of this paper is to assess the self-perception of health and psychological symptoms of medically downgraded personnel and the association between the reasons given by the servicemen for their medical downgraded status and their psychological symptoms. The analysis was based on a representative sample of military personnel who participated in a study to assess the value of a screening programme for psychological and physical health in the UK Armed Forces.[7]

Abbreviations: AFPAA, Armed Forces Personnel Administration Agency; GHQ, General Health Questionnaire; MO, Medical Officer; PTSD, post-traumatic stress disorder; RAF, Royal Air Force; RN, Royal Navy; TA, Territorial Army

Table 1 Criteria for referral to medical centres according to length of the questionnaire

Dimension	Full questionnaire	Abridged questionnaire
Symptoms	⩾5 mild or combinations of mild and moderate; ⩾3 moderate; at least 1 severe symptom	At least 3 mild or moderate symptoms or at least 1 severe symptom.
GHQ	GHQ-12 score 4/5	GHQ-4 score 1/2
PTSD	17 items score of 50 or more	14 items score > 40

METHODS

Two groups were randomly selected, by strength of each service (Royal Navy (RN), Army, and Royal Air Force (RAF)) to receive either a full questionnaire or a short questionnaire.[7] The questionnaires were individually addressed and sent to the unit Commanding Officer. Stamped addressed envelopes were supplied for the return of questionnaires. Three mailings were carried out to increase response.

The two questionnaires included the items ''Are you currently medically downgraded?'' and ''If yes, explain why''. A military doctor colleague (NG) coded the explanations following a priori agreed broad classification of pathologies into acute physical injury, chronic physical injury, acute non-injury condition, chronic non-injury condition, mental illness, miscellaneous, and no reason given. Thus the classification of conditions in our study was entirely based on the reasons given in the questionnaire and in some cases may not correspond to doctor's diagnosis. Examples of conditions in each category are as follows. Acute physical injury: knees swelling; pulled muscle in the shoulder; broken collar bone, Achilles tendon injury, a broad range of fractures. Chronic physical injury: broke back nearly two years, rugby injury for five years, ankle persistent damage, and knee and back injury resulting in two operations. Chronic physical injury with a probable psychological component such as ankle and knee problems, lower back pain, neck and back problems, pain both knees, and recurring neck pain. Thus conditions known to be influenced by psychological symptoms were included in this group.[8–10] These diagnoses are generally made without objective verification. Acute non-injury problem: nephritis, appendix removed, hyperthyroidism, and anaphylactic shock. Chronic non-injury condition: Crohn's/colitis, Hodgkin's disease, recurrent epidydimitis, asthma, and sarcoidosis. Mental illness: breakdown; severe depression, chronic fatigue syndrome. Miscellaneous: contact lenses to fly; pregnancy, overweight, need to wear glasses, Army cannot be bothered to send for doctors so cannot be upgraded, hearing problems. Some of the reasons did not fall neatly into one of the categories or may have fallen into more than one category, but these were a very small percentage (approximately 3%) of the total.

Table 2 Medically downgraded status according to the characteristics of the military personnel in the study

	Survey		
		Downgraded	
	n	n	(%)
Rank			
Officers	602	65	(10.8)
Other ranks	2271	291	(12.8)
Service			
Army	1367	188	(13.8)
Navy	684	70	(10.2)
RAF	822	98	(11.9)
Gender			
Females	231	30	(13.0)
Males	2642	326	(12.3)
Age (years)			
<30	1056	120	(11.4)
⩾30	1817	236	(13.0)

The psychological scales included in our analysis were the post-traumatic stress disorder (PTSD) checklist (PCL),[11] the General Health Questionnaire 12 (GHQ-12) as a measure of psychological distress,[12] and 15 symptoms selected from a previously used questionnaire.[13] We also assessed the quality of life in relation to medically downgraded status in part to check the quality of the information provided by the participants and in part to assess their feelings about their own health. We included an item on self-assessed health status, and questions on work limitation, vigorous activity, and social activity from the SF-36.[14] We also included two questions on perception of health in comparison to others and expectations about future health. The abridged questionnaire included the self-perception of health item, a PTSD checklist of 14 rather than 17 items, four items of the GHQ-12,[12] and five of the 15 symptoms of the full questionnaire. The questions excluded from the PTSD checklist were ''trouble remembering important parts of a stressful experience'', ''feeling as if your future will somewhat be cut short'', and ''having difficulty concentrating''. The symptoms explored were chest pain, pain on passing urine, fatigue, joint stiffness and pain, without swelling or redness, in several joints. The four GHQ questions were ''been able to enjoy your normal day-to-day activities'', ''been feeling unhappy and depressed'', ''been losing confidence in yourself'', and ''been feeling reasonably happy, all things considering''.

We used pre-established criteria for dichotomising or categorising each of the psychological scales (table 1). Information was also obtained on gender, service, age, and rank.

In the main analysis we assessed the odds ratios of poor self-perceived health status, GHQ, PTSD, and symptoms high scores among downgraded and not downgraded, adjusted for age, gender, rank, service, and length of the questionnaire.

Table 3 Medically downgraded status and quality of life in terms of self-perception of health and limited activities (only full questionnaire)

	Medically downgraded (n = 169)		Not medically downgraded (n = 1213)	
	n	(%)	n	(%)
Vigorous activity limited by health (a little or a lot)	74	(43.8)	29	(2.4)
Health has interfered with social activities (quite a bit or extremely)	46	(27.2)	80	(6.6)
Health has meant cutting down on time at work	39	(23.1)	97	(8.0)
Health has meant less is accomplished at work	61	(36.1)	163	(13.4)
Health has limited the kind of work performed	86	(50.9)	132	(10.9)
Health has caused difficulty in performing work	65	(38.5)	140	(11.5)
At least one of the limitations above	119	(70.4)	325	(26.8)
Seem to get ill more easily than other people (definitely or mostly true)	25	(14.8)	70	(5.8)
Expect my health to get worse (definitely or mostly true)	83	(49.1)	282	(23.2)
Self-perception of health (poor or fair)	62	(36.7)	117	(9.6)

All comparisons p<0.001.

Table 4 Medically downgraded status and screen positives in the GHQ, PTSD, and symptoms scales (definition of positive given in the methods section)

	Full questionnaire		Abridge questionnaire		Comparison by downgraded status*	
	Downgraded (n = 169)	Not downgraded (n = 1213)	Downgraded (n = 187)	Not downgraded (n = 1304)	Unadjusted odds ratio†	Adjusted odds ratio‡
	n (%)	n (%)	n (%)	n (%)	OR (95% CI)	OR (95% CI)
GHQ	47 (27.8)	240 (19.8)	60 (32.1)	236 (18.1)	1.84 (1.44–2.36)	1.84 (1.43–2.37)
PTSD	12 (7.1)	21 (1.7)	10 (5.3)	31 (2.4)	3.12 (1.87–5.20)	3.06 (1.82–5.15)
Symptoms	31 (18.3)	75 (6.2)	10 (5.3)	48 (3.7)	2.57 (1.77–3.74)	2.37 (1.62–3.47)

*Data from full and abridged questionnaires combined.
†Adjusted for length of questionnaire but not for other variables.
‡Adjusted for length of questionnaire, age, gender, rank, and service.
All differences between downgrade and not downgraded were significant ($p<0.001$).

We also assessed whether the distribution of our main explanatory factors varied according to the condition given as a reason for medical downgrading.

RESULTS

Altogether 2873 (66.8%) out of 4304 servicemen completed the questionnaire. The full questionnaire had a 64.7% response rate and the abridged questionnaire 69.6%, the difference being 4.9% (95% CI 2.3 to 7.4%). Table 2 gives the distribution of medical downgrading by rank, service, gender, and age. Three hundred and fifty six (12.4%) out of 2873 participants indicated that they were currently medically downgraded. Although there was a slightly higher percentage of medically downgraded among other ranks, Army personnel, and those over 30 years old, the prevalence of medically downgrading was broadly similar.

As would be expected, medically downgraded personnel reported frequent limitations in terms of work output and type of work carried out, difficulty in performing work, and time devoted to work (SF-36) (table 3). Almost half of them indicated they were impeded in carrying out vigorous activities in comparison to non-downgraded personnel. The great majority of medically downgraded personnel (70.4%) had a social or work limitation. Medically downgraded personnel were more pessimistic in relation to their perception of health and in relation to future health than their colleagues. Their self-perception of health was much worse than those who were not medically downgraded.

Medically downgraded personnel were more likely to have high scores on the GHQ, PTSD checklist, and the list of symptoms than non-medically downgraded personnel (table 4). All the association were significant to a p value <0.001. The effects size of medically downgrading in relation to psychological distress, PTSD checklist, and symptoms scores were very marked varying from an OR of 1.84 to an OR of 3.06. The difference in terms of symptoms, by medically downgraded status, was more marked when using the full questionnaire, an instrument that should have a higher validity, as number of symptoms is an important component of somatisation.

Most medically downgraded personnel reported reasons related to chronic physical injury (50%) and chronic physical non-injury conditions (22.8%) (table 5). Very few of the medically downgraded personnel gave a psychiatric condition as a reason for their status. Most conditions, which were considered to have an important psychological component, were chronic physical injuries. Thus the distribution is shown according to whether a possible psychological component may have contributed to the self-reported diagnosis.

There was no difference in association between the broad diagnostic categories for being medically downgraded and the GHQ, PTSD, and symptoms scores (table 5). However, there was a borderline association ($p = 0.055$) when at least one of the three assessments—GHQ, PTSD, or symptoms score—was above the threshold. Those giving as reason a chronic injury condition, regardless of classifying it as having a psychological component, had a higher prevalence of at least one high score. The other broad diagnostic categories also had a high prevalence of at least one assessment above threshold, but those medically downgraded for mental illness had a lower prevalence of high scores than the other groups.

DISCUSSION

This survey, based on a random sample of the British Armed Forces, has shown that 12.4% of the military personnel were medically downgraded. The information on medical downgrading was consistent with the high percentage reporting a work or social activity limitation based on items of the SF-36, in comparison to non-medically downgraded personnel. Our main finding was that psychological health issues were

Table 5 Distribution of downgraded personnel by broad diagnostic categories based on self-report, and screen positives in the GHQ, PTSD, and physical symptoms scales (criteria for screen positives given in the methods section)

	GHQ		PTSD		Symptoms		Any of the three†		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Acute physical injury	8	(25)	3	(9)	3	(9)	12	(37)	32	(9.0)
Chronic physical injury										
Without psychological component	37	(35)	2	(2)	12	(11)	45	(43)	105	(29.5)
Possible psychological component	29	(40)	7	(10)	13	(18)	33	(45)	73	(20.5)
Acute physical non-injury	1	(14)	1	(14)	0	(0)	2	(29)	7	(2.0)
Chronic physical non-injury	16	(20)	4	(5)	5	(6)	19	(23)	81	(22.8)
Mental illness (acute and chronic)	1	(14)	0	(0)	1	(14)	1	(14)	7	(1.9)
Indeterminate	15	(29)	5	(10)	7	(14)	17	(33)	51	(14.3)
p Value*	0.10		0.12		0.37		0.055			

*From Fisher's exact test.
†Any of the three meaning high score in the GHQ, PTSD checklist, or symptoms list.

highly prevalent among medically downgraded personnel, especially among those with a chronic physical injury. The few giving ''mental illness'' as a reason for medical downgrading had a lower percentage above the threshold, possibly because they were in treatment.

This survey was carried out before the Iraq War thus it was not influenced by the magnitude of the deployment which took effect several months after the end of our survey. The response rate was similar to those reported in surveys carried out in an unselected population of the Armed Forces.[16] The main reason for the study was to assess the value of a screening programme for psychological health. The participants knew that we were assessing psychological health, as the covering letter explaining the study indicated that it was commissioned to improve the detection of health problems, including psychological well-being. An overall prevalence of medical downgrading of 12.4% based on information in the questionnaires is in broad agreement with a prevalence of 10.6% provided to us by the Armed Forces Personnel Administration Agency (AFPAA) for our total sample at the start of the study. The difference may be related to part of the information on medically downgrading not reaching the AFPAA and some small differences in prevalence between those completing and those not completing the questionnaires.

A possible weakness of our study was the low number of subjects with a mental illness as a reason for medical downgrading. In a survey situation in population studies individuals are unlikely to volunteer such information. Stigma is still an issue in relation to mental illness.[17 18] It is culturally more acceptable for individuals to endorse physical symptoms, rather than mood disorders in these type of studies.[19] We cannot exclude the possibility that with a more candid approach to explain more fully to the participants that we were concerned about the appropriate management of emotional problems in the services, we would have found more willingness to disclose emotional reasons for medical downgrading. Our study cannot distinguish between the characteristics of personnel permanently medically downgraded from those only temporarily downgraded. We were constrained to develop a shortened questionnaire since it was considered that the length of the questionnaire would influence response rate, as was indeed shown.[7] Thus we could not include many psychological issues such as the perception of psychological problems among the participants.

It is remarkable that the majority (70%) of medically downgraded personnel perceived work or social limitations. This is a high percentage as a large group (14%) are in the indeterminate group or may be near full recovery, but they should go through the administrative medical process for full employability. There was also a percentage of subjects that in spite of their medical downgraded status felt no work or social limitations. This is a common feature in studies of quality of life in which usually many subjects state good to excellent quality of life in spite of the severity of their condition and associated disablement.[20] In our study the responses to these quality of life questions were not only influenced by their status, downgraded or not, but also by their psychological symptoms that are so prevalent in the medically downgraded group.

In a written statement to parliament in 2004, the Minister for the Armed Forces, Ivor Caplin MP, reported that 959 people were medically discharged for mental health disorders between 1997 and 2003.[21] This figure is most likely to represent the most severe cases of mental illness and is a small proportion of those downgraded in the services. In the US between 6% and 10% of military personnel receive treatment for a mental health problem each year.[22 23] It is known that hospitalisation for psychiatric illness is a strong predictor of separation from military service.[22] In our study, we suspect that some of those medically downgraded for mental illness may have given reasons compatible with somatisation in our questionnaire. Somatoform disorders were a frequent diagnosis among those medically discharged in the ministerial statement.

We expected that among those with conditions such as low back pain, neck pain, and knee pain, known to be influenced by psychological symptoms,[8–10] we would have found a high prevalence of psychological symptoms. This was the rationale a priori for including them in a separate group—chronic physical injury with a probable psychological component. However, it was less expected that the prevalence would be equally high for other chronic physical injury conditions and fairly high for other types of conditions. The cross sectional design of our study does not allow an unequivocal explanation about the causal relation between chronic injury and psychological symptoms. It is possible that medically downgraded personnel may be more prone to develop psychological symptoms, but also individuals with psychological illness, for example somatoform and anxiety disorders, may be more prone to become medically downgraded.[9 24]

The scarce literature on medical downgrading has usually been concerned with illness that has not been identified by Medical Officers (MOs)[25] or of those who are deployed regardless of medical employability.[6] The perception of the problem is that there is much variability in medical downgrading related to doctors not always following the rules as closely as they should. In addition personnel may fail to report illness to MOs and MOs may fail to medically downgrade individuals with pre-existing conditions because of the effect on the career prospects of the servicemen.[25] The main inference of these studies representing the clinical perspective, most of them based on Army personnel, is that the system is not working effectively, leading to servicemen's frustration and Commanding Officers having to make do with reduced manpower resources at critical times.

Notwithstanding these criticisms, our results seem to indicate that the problem may not be so much identifying

Key messages

- 12.4% of Armed Force personnel are medically downgraded.
- Psychological symptoms were highly prevalent regardless of the reason of medical downgrading.
- Psychological symptoms were especially high among those with a chronic physical injury.
- Very few volunteered a mental illness condition as a reason for medical downgrading.
- Our study cannot contribute to disentangling whether psychological symptoms contribute to medical downgrading or vice versa.

Policy implications

- The Defence Medical Services should explore the psychological illness issues related to medical downgrading.
- A better understanding of the psychological symptoms related to medical downgrading may have a beneficial effect in lowering the prevalence of medical downgrading, and/or shortening the period that military personnel remain in such status.

individuals who are not fully employable (although this may be also an important component) but that those who are not fully employable may experience symptoms of mental illness that may contribute to their remaining medically downgraded. We expected that a higher percentage of medically downgraded personnel would have psychological symptoms than those not medically downgraded. However, the magnitude of the association between high GHQ, PTSD, and somatisation scores among those medically downgraded was very high—approximately 50% of the group.

We believe that the Defence Medical Services would do well to explore the mental illness issues surrounding medical downgrading because of its high prevalence within this group, and the high prevalence of psychological symptoms regardless of reason, but especially in the chronic injury categories. The mechanism or mechanisms for the high percentage of individuals with psychological illness symptoms is not entirely clear, but probably many of them may be predisposed to injury or could remain longer than necessary as medically downgraded. There are important health gains to be made if a special interest were taken in exploring the potential for modifying the mental health context of these individuals, as psychological morbidity may be treated effectively.[26 27]

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