

ORIGINAL PAPER

Screening for physical and psychological illness in the British Armed Forces: I: The acceptability of the programme

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J Med Screen 2004;11:148-153

Objectives: To assess the response to a self-administered questionnaire and attendance of a medical centre for physical and psychological health screening.

Methods: 4500 men and women from the three services were randomly selected to receive either a full or abridged screening questionnaire. The full questionnaire included the General Health Questionnaire-12 (GHQ-12) and Post-traumatic Stress Disorder (PTSD) checklist, 15 symptoms, a self-assessed health status question and three questions on alcohol behaviour (WHO Audit). The abridged questionnaire included GHQ-4, a slightly shortened PTSD checklist and five symptoms, but excluded questions on alcohol behaviour. All 'screen-positive' and a random 'screen-negative' sample were invited to attend a medical centre.

Results: 67.1% of the servicemen completed a questionnaire; slightly but significantly more the abridged than the full questionnaire (4.9%, 95% confidence interval 2.3-7.4%). Of those receiving a full or abridged questionnaire, 32% and 22.5% respectively were 'screen-positives', most of the difference (7.5%) attributable to alcohol behaviour. Less than 30% of the servicemen invited to attend a medical centre accepted the invitation, even fewer during the preparation for deployment to Iraq. Those who fulfilled the criteria for PTSD, alcohol behaviour or multi-criteria 'screen-positive' were more reluctant than controls to attend.

Conclusions: Screening for psychological illness has little support among servicemen, perhaps because they may not wish to share concerns with a military doctor. Avoidance behaviour among those with a psychological condition may also selectively reduce willingness to attend a medical centre. Screening during pre-deployment periods has even less support than at other times.

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Accepted for publication
19 March 2004

Screening for physical and psychological health in the Armed Forces has a long history.¹ After the Gulf War in 1991 interest in screening for psychological illness was rekindled by the increased prevalence of physical symptoms, psychological distress and Post-Traumatic Stress Disorder (PTSD) in those deployed.²⁻⁴

This interest in health screening in Britain is shared by Allied Forces. The US Department of Defense (DoD) implemented a Force Health Protection scheme that included a pre and post-deployment health assessment based on a short questionnaire.⁵ Psychological screening of US Peacekeepers deployed mainly in Kosovo and Bosnia has been conducted, but the reported results would be difficult to extrapolate to the whole organisation.⁶ The Australian Defence Force (ADF) has been developing psychological assessment and mental health screening linked to deployment since 1999, but results have not been reported. With the exception of the DoD programme,⁵ the usual content of military screening programmes includes a PTSD scale, a self-rating depression or psychological distress scale, an alcohol problem scale, a brief psychological interview, and a physical health questionnaire.⁶

The UK Surgeon General's Department, through the Health Surveillance Steering Group (HSSG), was interested in assessing the need of a screening programme of physical and psychological health. The scheme was conceived as a regular event, unlike the American and Australian schemes, unrelated to any specific deployments but including infor-

mation about deployments. Pre- and post-deployment periods are times of intense preparation, medical resources are constrained and the time to react to a health problem too short. Unlike other countries, in Britain the number of deployments can be many over a short period of time.^{6,7} The screening programme for the military should fulfil the criteria recommended by the UK National Screening Committee before implementation.⁸ A study was carried out with the purpose of reproducing the conditions in which a screening programme would operate in the Armed Forces. 'Screen-positive' servicemen identified by our questionnaire would be referred to medical centres for a consultation with a medical officer (MO), the military equivalent of a general practitioner.

The aims of the project were to assess the acceptability of a full and an abridged screening questionnaire of physical and psychological health, as well as the sensitivity, specificity and predictive values of the screening questionnaires, and to estimate the frequency of consultations elicited by the questionnaire. In this paper we will focus on the acceptability of screening.

METHODS

Sample

Two groups were randomly selected: group 1 received the full screening questionnaire and group 2 the abridged questionnaire. The selection of the groups was based on

units of the Royal Navy (RN), Army and Royal Air Force (RAF) by their relative strength at July 2001. Units were randomly selected, and 45 individuals were randomly selected from each unit. The selection was stratified by unit size, using as cut-off point a strength of 150 individuals and excluding units of less than 50 individuals. Altogether 4500 men and women were selected for the study. All selected servicemen in a unit received the same type of questionnaire.

Screening questionnaires

Two questionnaires were developed. The full questionnaire included the civilian version of the PTSD checklist,⁹ the General Health Questionnaire 12 (GHQ-12) as a measure of psychological distress,¹⁰ 15 symptoms selected from a previously used questionnaire,³ a self-assessment of health status from the Short Form 36 (SF-36)¹¹ and three questions from the WHO Audit questionnaire.¹² The fifteen symptoms were selected to represent symptoms of high, intermediate and low prevalence in previous studies.

In setting criteria of 'screen-positives' for the symptoms dimension, the total number of symptoms ticked and their perceived severity were assessed.^{13,14} We deducted from the symptoms score those symptoms for which the servicemen reported receiving treatment. We did not count symptoms that could be explained by a recent cold or flu, a food poisoning event, or vigorous physical activity.

The abridged questionnaire included a PTSD checklist reduced from 17 to 14 items, a selection of four items from the GHQ-12 following published criteria,¹⁵ five of the fifteen symptoms of the full questionnaire and a question on self-perception of health. We excluded questions on alcohol behaviour.

Information was also obtained on gender, age, rank and the number of deployments since 1999. The questionnaires were piloted to assess understanding, acceptability, omissions and appropriateness of the categories on the questionnaires.

Table 1 shows the criteria for referral to a MO. We chose high enough cut-off points based on data collected in the Gulf War study and consistent with the literature.^{9,16} For alcohol intake the cut-off point was well above current recommendations to take into account prevailing cultural patterns in young adults and in the Services.

Referral questionnaires

Two short questionnaires, one completed by the servicemen and the other by the MO, were developed to assess the value

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 |
| Health status | Poor | Poor |
| Alcohol intake | Combinations of questions giving 40+ units a week in males and 30+ in females, or if somebody expressed concern with serviceman's drinking in past year | Not applicable |

GHQ, General Health Questionnaire. PTSD, Post-traumatic Stress Disorder.

of the medical consultation triggered by the screening questionnaire.

Servicemen who did not attend the medical centre as requested were sent a questionnaire asking them to select their reason(s) for not attending the medical centre.

Data collection

The screening questionnaires were individually addressed and sent through the Commanding Officer. Stamped, addressed envelopes were supplied for the return of questionnaires. Completed questionnaires, active refusals and return to senders were logged on a database. Three mailings were carried out to increase response.

Two research assistants manually reviewed the questionnaires assigning each to the categories 'screen-positive' or 'screen-negative'. Referrals to medical centres were organised in two batches called cohort 1 and cohort 2 according to the date the questionnaire was returned. 'Screen-positives' and an equal number of randomly selected 'screen-negatives' were referred to an MO. The post-consultation questionnaires were used to estimate attendance rates.

RESULTS

The distributions of age, gender, service and number of deployments since 1999 by type of questionnaire were similar (Table 2).

Table 3 gives the response rate after three mailings, excluding from the denominator servicemen who were discharged (108), those whose questionnaires were returned to senders and no new address supplied (64), the date of birth given by the servicemen did not match that provided by the MoD personnel agencies (12) or they were Absent Without Leave (8). The response rate were 64.7% for the full questionnaire and 69.6% for the abridged questionnaire, a difference of

Table 2 Sample characteristics of those completing the screening questionnaires

| Characteristic | Full n=1382 | Abridged n=1491 | Total n=2873 |
|---|-------------|-----------------|--------------|
| % male | 92% | 92% | 92% |
| Mean age (sd) | 32.3 (7.8) | 32.5 (7.9) | 32.4 (7.9) |
| Number of countries deployed to since 1999: | | | |
| 0 | 44% | 40% | 42% |
| 1 | 31% | 36% | 33% |
| >1 | 25% | 24% | 24% |
| Service: | | | |
| Royal Navy | 23% | 24% | 24% |
| Army | 48% | 47% | 48% |
| Royal Air Force | 29% | 29% | 29% |

Table 3 Response rates* by length of screening questionnaire

| Status | All mailings | |
|-------------------------|--------------|-----------------|
| | Full n=2153 | Abridged n=2151 |
| Completed Questionnaire | 1392 (64.7%) | 1498 (69.6%) |
| Refusal | 181 (8.4%) | 178 (8.3%) |
| No response | 580 (26.9%) | 475 (22.1%) |
| Total response | 1573 (73.1%) | 1676 (77.9%) |

* Including 10 full and 7 abridged questionnaires which arrived too late to be included in subsequent analyses.

4.9% (95% CI 2.3–7.4%). Eight per cent actively refused to participate, most returning the unfilled questionnaire following a change in the covering letter at the third mailing. The response rates were similar for the three Services: 67.1% in the RN, 66.9% in the Army and 67.5% in the RAF.

There was a higher prevalence of 'screen-positive' when the full questionnaire was used, but this was due to the absence of alcohol intake questions in the abridged questionnaire (Table 4). Symptoms, GHQ and alcohol intake were equally important reasons for referral in the full questionnaire, but the GHQ was by far the most prevalent reason in the abridged questionnaire. The prevalence of 'screen-positive' PTSD was 2.5% but most of these servicemen were above the threshold for other criteria and would have been referred anyway.

A total of 1421 servicemen were invited to visit the MO but only 1136 were available at the time of referral. The remaining 285 had been discharged, posted, detached or had died (in one case). The percentage accepting the invitation was very low regardless of cohort, but especially so for Cohort 2 (Table 5). 'Screen-positives' completing the full question-

Table 4 Number of 'screen-positives' by criterion of referral and length of the screening questionnaire*

| Dimension | Full n=1382 | Abridged n=1491 | Total n=2873 |
|--------------------------|----------------|--------------------|-----------------|
| GHQ | | | |
| Only | 88 (6.4%) | 224 (15.0%) | 312 (10.9%) |
| Co-morbidity | 117 (8.5%) | 72 (4.8%) | 189 (6.6%) |
| Symptoms | | | |
| Only | 94 (6.8%) | 23 (1.5%) | 117 (4.1%) |
| Co-morbidity | 117 (8.5%) | 36 (2.4%) | 153 (5.3%) |
| PTSD | | | |
| Only | 4 (0.3%) | 6 (0.4%) | 10 (0.3%) |
| Co-morbidity | 29 (2.1%) | 35 (2.3%) | 64 (2.2%) |
| Health perception | | | |
| Only | 2 (0.1%) | 7 (0.5%) | 9 (0.3%) |
| Co-morbidity | 21 (1.5%) | 18 (1.2%) | 39 (1.4%) |
| Alcohol | | | |
| Only | 104 (7.5%) | N/A | 104 (3.6%) |
| Co-morbidity | 68 (4.9%) | N/A | 68 (2.4%) |
| Total 'screen-positives' | 439 (31.8%) | 335 (22.5%) | 774 (26.9%) |

* NB Screening questionnaires received after the cut off date for referral have been included in this table. GHQ, General Health Questionnaire. PTSD, Post-traumatic Stress Disorder.

Table 5 Response rates at the referral stage

| Responder | Cohort 1 n=713 | Cohort 2 n=423 | Total n=1136 |
|--|-------------------|-------------------|-----------------|
| Post consultation questionnaire received from doctor | 231 (32.4%) | 83 (19.6%) | 314 (27.6%) |
| Post consultation questionnaire received from serviceman | 255 (35.8%) | 83 (19.6%) | 338 (29.7%) |
| Post consultation questionnaire received from serviceman excluding those who doctor says did not make an appointment | 233 (32.7%) | 75 (17.7%) | 308 (27.1%) |
| Post consultation questionnaire received from both doctor and serviceman | 202 (28.3%) | 53 (12.5%) | 255 (22.4%) |

1421 servicemen were invited to participate of which 1136 were available to be referred i.e. excluding those who have been discharged, posted, changed address or died.

naire were less likely to visit the MO than 'screen-negatives' ($p=0.006$). Those who drank alcohol in excess and, regardless of length of the questionnaire, those identified as 'screen-positive' by the PTSD checklist were less likely to attend ($p=0.002$ and $p=0.001$ respectively). There was a significant trend for not attending the medical centre for those who were positive on several health criteria in the full questionnaire ($p=0.003$). This was not so for the abridged questionnaire. Younger servicemen, lower ranks and those in the Army were least likely to attend the medical centre.

Work/deployment elsewhere and lack of time were the main reasons given among the 47% who completed a question on their reason for not accepting the invitation (Table 6). A larger percentage of 'screen-positive' than 'screen-negative' chose the option 'What's the point, little will be done if a problem is identified' (12.3%; 95% CI 6.9–17.7%).

DISCUSSION

This study was carried out in 2002 and part of 2003, so it provides an assessment of the current level of voluntary participation, as opposed to compulsory participation, in physical and psychological health screening of the British Armed Forces.

The strength of this study was that it was based on a randomly selected sample so the results are applicable to the

Table 6 Reasons* given by servicemen for not attending the Medical Centre by screening status. Number of forms sent = 915 (475 cases, 440 non cases)

| Reason | Screen-positives n=208† | Screen-negatives n=225† | Difference in proportion % (95% CI) |
|---|----------------------------|----------------------------|--|
| Unable to attend Medical Centre due to work/deployment elsewhere | 106 (51%) | 122 (54.2%) | -3.2 (-12.7 to 6.1) |
| Have not got time to attend Medical Centre | 45 (21.3%) | 38 (16.9%) | 4.7 (-2.7 to 12.2) |
| Lost interest in taking part in study | 21 (10.1%) | 13 (5.8%) | 4.3 (-0.8 to 9.4) |
| Did approach Medical Centre for consultation but turned away | 17 (8.2%) | 10 (4.4%) | 3.7 (-0.9 to 8.3) |
| Don't wish to see a military doctor | 12 (5.8%) | 6 (2.7%) | 3.1 (-0.7 to 6.9) |
| What's the point, little will be done even if a problem is identified | 32 (15.4%) | 7 (3.1%) | 12.3 (6.9 to 17.7) |
| There's nothing wrong with me so visiting the doctor is a waste of time | 22 (10.6%) | 32 (14.2%) | -3.6 (-9.8 to 2.5) |
| Other (Please write below) | 33 (15.9%) | 35 (15.6%) | 0.3 (-6.6 to 7.2) |

* Subjects allowed to tick more than one reason. † Replies = 437 (47.8%) of which 208 are 'screen-positives' and 225 are controls. CI, confidence interval.

whole organisation, the sample size had sufficient power to assess all the aims of the study, very few units were excluded from the sampling frame and we did not need to replace units.

The main findings of our study are that servicemen were willing to complete the screening questionnaire, but were reluctant to accept the invitation to attend the medical centre in relation to the screening programme.

More than 25% of the servicemen who completed the screening questionnaire were identified as 'screen-positive' despite the high thresholds used. This high percentage is unsurprising in comparison to studies related to the Gulf War experience.²⁻⁴ If our results were extrapolated to the whole of the British Armed Forces, between 45,000 and 60,000 servicemen would be referred to a medical centre in the first cycle of the screening programme. This would have a serious repercussion for the readiness and preparedness of the Services, and medical resource implications. As will become apparent by reading the accompanying paper the identification of a 'screen-positive' by a questionnaire bears little or, at most, intermediate relation to clinical assessment and self-perception of health status.

The difference in response rate to attend for medical assessment between the two cohorts may have been due to a higher prevalence of late responders to the screening questionnaire in Cohort 2 in comparison to those in Cohort 1, and to preparation activities related to the Iraq War. The poor attendance rate to the medical centre would suggest that a screening programme such as the one evaluated would be unwelcome at any time, and more so if it were to coincide with preparation for deployment. Probably more revealing was the finding that 'screen-positives' in the full questionnaire were less willing to attend the medical centre than controls. Our findings on poor acceptability may be dependent on patient's clinical symptoms, beliefs,¹⁷ confidence in Defence Medical Services (DMS) to carry out screening, educational and organisational issues. Symptomatic social withdrawal or a feeling of estrangement from others is a characteristic of PTSD,¹⁸ so it could have explained the lower percentage of attendance in those who may have this condition and, likewise the same is probably true for those with more severe depressive illness.¹⁹ It is also possible that some of those who had transient symptoms that disappeared by the time the invitation was received were less likely to attend the medical centre. Likewise those who drank excessively were less willing to attend a medical centre. Previous studies have shown that GP attempts to screen for excessive drinking within their practice is unhelpful in primary care unless the subject is willing to tackle his drinking problem.²⁰

In the military health care system doctors have both a duty of care to their patients and a duty to safeguard the interests of the whole organisation.²¹ As a consequence of this double role, servicemen may be less inclined to divulge personal information to MOs as it may jeopardise career prospects.

The short questionnaire asking for reasons for non-attendance at the medical centre provided an indication of lack of faith in DMS among some servicemen. Although many servicemen chose a less controversial reason for not attending, a frequently ticked option was related to low expectation from the consultation. This is not evidence that low expectations extend to areas of MOs' activities other than psychological screening. An exacerbating factor was that some servicemen were turned away from medical centres, perhaps because staff, too, were reluctant to engage with the programme.

In conclusion our study shows that screening for physical and psychological health is not acceptable to servicemen, probably because there is lack of trust among service personnel concerning discussion of psychological problems. Social withdrawal, a feature of some psychological conditions, decreases the willingness of some servicemen to attend the medical centre. Attendance to a medical centre is also made more difficult by the nature of military activity as servicemen are frequently out of reach of medical centres for a long time, especially in the RN. If the screening were carried out during pre-deployment periods it would be even less acceptable.

ACKNOWLEDGEMENTS

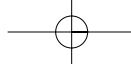
We are indebted to the administrative services in the Armed Forces, the Defence Analytical Service Agency and the British Forces Post Office at Mill Hill, staff in the medical centres and, especially, the servicemen. This study was funded by the Defence Science and Technology Laboratory (Dstl), part of the MoD. Those who funded the study had no input into the data analysis, results presented or their interpretation. A copy of the manuscript was sent to the liaising Dstl officer and the chairman of the HSSG for comments before submission.

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