Risk of post-traumatic stress disorder among Danish junior medical officers deployed to Afghanistan is not increased

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ABSTRACT

INTRODUCTION: Since August 2006, the Danish Armed Forces have deployed junior medical officers (JMOs) to the Helmand Province in Afghanistan. Research has shown an increased incidence of post-traumatic stress disorder (PTSD) in deployed military personnel throughout the history of modern warfare. No investigation of the mental health of Danish military medical personnel has been performed. We wanted to investigate the extent of potentially traumatizing events experienced by Danish JMOs and the prevalence of PTSD among them.

MATERIAL AND METHODS: We included all JMOs deployed for one or more tours of duty in Afghanistan from January 2006 to August 2010. Potential participants received a questionnaire to their home address including the PTSD Checklist – Civilian Version (PCL-C).

RESULTS: A total of 72 JMOs were included in the survey. The completion rate was 65%. We found that 98% of the respondents had experienced a potentially traumatizing event and that 47% had experienced feeling fear, horror or helplessness in the context of such an event. The prevalence of PTSD was 0%.

CONCLUSION: Danish JMOs do not seem to have an increased risk of PTSD after deployment to Afghanistan. However, further research on the mental health of this personnel group is needed.

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TRIAL REGISTRATION: This study was registered with the Danish Data Protection Agency.

Since the summer of 2006, the Danish Armed Forces (DAF) has sent combat units to serve with the International Security Assistance Force (ISAF) in the Helmand Province in Afghanistan. The overall objective of the Danish engagement in Helmand is to contribute to security and reconstruction through a comprehensive and fully integrated political, civil and military approach [1]. This means that Danish soldiers are taking active part in combat operations in the most dangerous war zone in Afghanistan.

Health-care personnel including military physicians are deployed along with the troops. In Denmark there are no military hospitals, and the physicians who are sent to Afghanistan as junior medical officers (JMOs) are trained at public hospitals after completing medical school. Subsequently, they participate in a mandatory JMO course of five months' duration organized by the Danish Armed Forces Health Service (DAFHS). The course includes training in basic military skills, sports medicine, pre-hospital trauma life support, diving medicine, aviation medicine and traumatology surgery.

The only requirement for a physician to be accepted for the course is that a hospital internship has been completed. At the time this survey was done, internship lasted one and a half years and consisted of half a year in general practice, half a year in a surgery department and half a year in a medical department. Consequently, the deployed JMOs have a comprehensive theoretical background, but generally lack practical experience.

The Danish troops are deployed together as a battle group to Helmand. Every sixth month a "relief in place" (RIP) is conducted of the battle group currently serving in the Danish area of operations. The RIP takes place in January and August. The JMOs are deployed to Helmand as individual augmentees at times staggered from the troop rotation cycles and staggered from the deployment of other JMOs as well. They are typically deployed for a period of seven weeks and are then redeployed individually. After redeployment, the JMOs are invited by the DAF to attend a homecoming reintegration meeting, which includes a conversation with a psychologist. It is not registered whether the JMOs participate in these reintegration meetings.

Thus, the JMOs are deployed as individual augmentees outside the rotation cycles of the Danish battle groups receive no mandatory follow-up on their mental health.

Combat deployments significantly increase the likelihood of symptoms of PTSD, and PTSD is associated with various adverse effects, including reduced functional health and quality of life. Furthermore, individuals with PTSD report more physical symptoms and co-morbidity than those without PTSD [2, 3]. Therefore, it is important to clarify the extent of PTSD among all deployed personnel including JMOs.

ORIGINAL ARTICLE

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In 2009, the Department of Military Psychology of the Royal Danish Defense College conducted a survey of the mental health of the personnel of an entire Danish battle group. It showed a PTSD rate of 5.1% seven to eight months after deployment [4]. The survey was titled USPER (Undersoegelse af psykiske efterreaktioner – Study of psychological aftereffects). However, no specific data on health-care personnel were included in the study.

The aim of our survey was to examine different aspects of the mental health of Danish JMOs during and after their deployment. This paper reports on the main outcome concerning PTSD symptoms.

MATERIAL AND METHODS

A total of 72 physicians have been deployed as JMOs for one or more tours of duty in Afghanistan from January 2006 to August 2010 and were thus relevant to the study. Potential participants received a letter to their home address. The letter included information on the survey, an invitation to participate in the survey, the survey questionnaire and a self-addressed return envelope; completion of the form by the participant was taken as consent to participate. The survey took about 20 minutes to complete and was anonymous.

The survey included the following questionnaires designated A through E: Questionnaire A addressed demographic variables. Questionnaire B addressed general conditions in the forward operating base (FOB) or camp, work conditions that contributed to overall stress, family conditions during the deployment, security level of the FOB/camp and questions about the character of the work the physician had done in Helmand (role designation of the medical facility, participation in patrols, etc.). Questionnaire C addressed the JMO's experiences with potentially traumatizing events. Questionnaire D was the PTSD Check List – Civilian Version (PCL-C). Questionnaire E addressed criterion A (trauma exposure) and F (impairment) of the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR) PTSD diagnosis and inquired whether treatment had been sought.

The PCL-C consists of 17 questions that correspond to the DSM-IV-TR criteria for PTSD [5, 6]. Respondents were asked how much they had been bothered by each symptom during the past month using a five-point scale ranging from 1 (not at all) to 5 (extremely). Response categories 3-5 (moderately or above) were treated as symptomatic and responses 1-2 (below moderately) as non-symptomatic.

Respondents were scored positive for probable PTSD if they had been exposed to trauma (criteria A1 and A2 in the DSM-IV-TR criteria) and had reported symptomatic in at least one intrusive symptom, three avoidance symptoms, and two hyper arousal symptoms during the past month, and had also received a PCL symptom severity score of 44 or above (PCL symptom severity score range: 17-85).

Demographic data on the participants were summarized based on frequencies and mean values. The proportion of participants with PTSD or probable PTSD was summarized based on criteria A1 and A2. Data are presented as the mean ± standard deviation (SD) unless otherwise indicated.

Trial registration: This study was registered with the Danish Data Protection Agency.

RESULTS

Participation rate: The survey was distributed to all medical physicians deployed as JMOs in Afghanistan from 2006 to 2010 (n = 72). A total of 49 surveys were returned, giving a response rate of 68%. Of the 49 respondents, two returned blank questionnaires and were excluded from the analyses, resulting in a sample size of 47 respondents (65% completion rate).

Demographic data: The final sample of 47 participants included 66% men and 34% women. The average age was 33.3 ± 5.1 years with ages ranging from 27 to 52 years. 22% were married at the time of deployment, 28% were living with a partner, 13% were in a relationship but not living with their partner, and 36% were single. 21% had children. The mean length of time from graduation from medical school to deployment to Afghanistan was 4.3 ± 4.8 years with a minimum of 1.5 years and a maximum of 24 years.

Post-traumatic stress disorder

Table 1 shows the number of respondents who gave positive answers to different questions concerning cri-

TABLE 1

Number of respondents who answered "yes" to questions concerning criteria A1 and A2 in the post-traumatic stress disorder diagnosis, n = 47.

Questions	n (%)
Concerning criterion A1	
Did you experience one or more people who were seriously injured or killed?	45 (96)
Did you personally know someone who was seriously injured?	22 (47)
Did you personally know someone who was killed?	8 (17)
Were you injured?	1 (2)
Did you experience a situation where you thought: "I am/we are not going to survive this!"?	1 (2)
Were you at any time involved in combat actions?	13 (28)
Number of respondent who answered yes to one or more of the above	46 (98)
Concerning criterion A2	
Did you experience a situation where you felt fear or horror?	15 (32)
Did you experience a situation where you felt helpless?	21 (45)
Number of respondent who answered yes to both or one of the two questions above	27 (57)

teria A1 and A2 in the PTSD diagnosis. In summary, Table 1 shows that 98% of the respondents reported exposure to a potentially traumatizing event which involved the threat of death or serious injury to themselves or the death or injury of others at some point during their deployment in Afghanistan. Fifty-seven percent reported feeling fear, horror and/or helplessness at the time of experiencing such trauma.

None of the respondents reported having psychological problems of any kind prior to deployment. None of the respondents met the PTSD criteria.

Table 2 shows the number of respondent who reported symptomatic in PTSD symptoms and gives the interquartile range (Q25%-Q75%) of the PCL total symptom severity score.

DISCUSSION

The main finding in this study was the 0% prevalence of PTSD among the respondents. A few reported symptomatic in the three symptom clusters, but none so severe as to correlate to a PTSD diagnosis.

The strengths of the study were: We had access to and included the entire population of Danish JMOs deployed in Afghanistan from 2006 to 2010; our response rate of 68 % and completion rate of 65% were sufficient for this type of study, particularly given that participation was voluntary and uncompensated; and we used a validated questionnaire (PCL-C) to find PTSD cases.

The study has some methodological limitations: Although the response rate was acceptable, the population size was small and findings should therefore be interpreted with caution. Furthermore, there is no way to determine bias regarding those who chose not to participate. Actual rates of probable PTSD might be higher than those reported here since it is possible that JMOs with more severe symptoms avoided participating in the survey. However, the USPER study included an analysis of the soldiers who did not answer the questionnaires after returning from Afghanistan. The conclusion was that the non-respondents did not generally differ from the respondents [4]. The same is likely to be the case for the JMOs in our study.

The study was undertaken in 2011 and examined Afghanistan deployments dating back to 2006. Therefore, there might be some distortion of experiences and perceptions due to recall bias. Because clinical interviews were not performed, the rate described may not represent the true rate of illness.

The fact that none of the respondents in our study met the PTSD criteria was surprising. Several studies concerning past wars through time have shown a large span, ranging from 2 to 24%, in the prevalence of PTSD among deployed personnel [2, 7-9]. We had expected PTSD prevalence in Danish JMOs at around the same level as that found among the soldiers participating in the USPER investigation from 2009, i.e. 5.1% [4].

Junior medical officer Jesper Sommer. Transferring patient. Camp Price, 2010.

Our findings may be due to several factors. First of all, though we know that combat deployments significantly increase the likelihood of the onset of PTSD after redeployment, studies have shown that specific combat experiences, rather than the deployment itself, are likely to induce PTSD [10-12]. Only 28% of the JMOs had been directly exposed to combat actions. This could in part be the reason for the non-existent prevalence of PTSD in JMOs in contrast to that in other military populations. Furthermore, we know that unrelated to the traumatic event, additional risk factors for developing PTSD include, among others, younger age at the time of the

TABLE 2

Post-traumatic symptoms and PTSD Checklist total severity score.

Respondents who reported at least one intrusive symptom, n (%)	4 (9)
Respondents who reported at least one avoidance symptom, n (%)	5 (11)
Respondents who reported at least one hyper arousal, n (%) symptom	6 (13)
Respondents who reported at least one intrusive symptom, one avoidance symptom and one hyper arousal symptom, n (%)	3 (6)
Respondents who reported at least one intrusive symptom, three avoidance symptoms and two hyper arousal symptoms, n (%)	1 (2)
Total symptom severity score, IQR	17-22
Respondents who reported at least one intrusive symptom, three avoidance symptoms *and* two hyper arousal symptoms and had a symptom severity score of 44 or higher, n (%)	0 (0)

IQR = interquartile range.

trauma, lower socio-economic status and lower military rank when deployed [13, 14]. The USPER investigation showed that the deployed soldiers had an average age of 26 years (min. 18, max. 57) [4]. The average age of the JMOs was 33 years. This means that the JMOs were generally older at the time of deployment than the soldiers, though we have no statistical calculations on this. Only 0.5% of the participants in USPER had a higher education comparable to medical school [4]. We therefore find it reasonable to assume that JMOs are from a higher socio-economic level than the majority of Danish soldiers. Likewise, JMOs have a higher rank (at least the rank of 1st lieutenant) than the average soldier.

Contrary to the above findings, we know that female gender is a risk factor for the development of PTSD [13]. Of the soldiers in the USPER survey, 4.9% were women compared with 34.4% of the JMOs [4]. Furthermore, it has been shown that unit cohesion serves as a protective buffer against PTSD symptom development [15]. The JMOs were, as mentioned previously, deployed to Afghanistan as individual augmentees outside the normal troop rotation cycles and we think that it is possible that they were not included socially in the unit to the same extent as other military personnel.

Another piece of the explanation regarding the lack of PTSD in JMOs could be an effect similar to the so-called "healthy warrior effect" [16, 17]. It is possible that the type of medical doctor who chooses to sign up for deployment as a JMO is more resilient to potentially traumatizing events than those who do not. Also, it is possible that those who find out during the JMO course, that they are not sufficiently prepared psychologically for deployment to Afghanistan choose to do their service in other areas where the DAF conduct operations (e.g. Kosovo, naval patrols around Greenland etc.).

Lastly, it should be mentioned that it is possible that some of the JMOs did, in fact, suffer from PTSD for a shorter or longer period at some point between their deployment and the time of this survey. This was not examined in the survey.

Practically all the respondents (98%) had been exposed to one or more potentially traumatizing events during their service in Afghanistan. This was not surprising since the character of their work as medical doctors in a combat zone is very likely to include experiencing acts of war and seeing seriously injured or killed soldiers and civilians. Neither was it surprising that 57% of the respondents had experienced feeling fear, horror or helplessness in one or more of these situations.

CONCLUSION

Our results suggest that medical physicians deployed by the DAF as JMOs in Afghanistan to a great extent experience potentially traumatizing events, but do not have an increased risk of PTSD after redeployment. Because of the limitations of this study, caution should be exercised in exploiting the results. Further examination of the mental health of JMOs and other military health-care personnel is needed to draw conclusions which can help the DAFHS prepare them optimally before deployment and provide the best possible psychological support during and after their deployment.

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