



Australian Government

Department of Defence

Department of Veterans' Affairs

TRANSITION AND WELLBEING RESEARCH PROGRAMME

Impact of Combat Study

IMPACT OF COMBAT REPORT

KEY FINDINGS

Response rates and demographics

Response rates and basic cohort characteristics

- A total of 1350 members of the cohort who participated in the MEAO (Middle East Area of Operations) Prospective Health Study (Times 1 and 2) were invited to participate in the Impact of Combat Study (Time 3). Of these, 486 were transitioned and 864 remained in the Regular ADF. For the survey component, there was a response rate of 26.5% for the Transitioned ADF members and 49.9% for the 2015 Regular ADF members. When examined within each nested subgroup, the response rates were similar.
- The distribution of medical fitness for responders compared with non-responders was similar. The majority of Transitioned ADF (83.6%) and 2015 Regular ADF (86.6%) responders were classified as fit.

Demographic characteristics

- The majority of cohort members were in a relationship and living together (68.0%).
- The majority of cohort members had completed educational qualifications of certificate level or above (58.8%); about one-third had completed primary or secondary school only.
- Among those who had transitioned from the ADF, 71.3% were in full- or part-time work, just under 10% were receiving a sickness allowance or disability support pension, 7.0% were students, and 3.5% were retired.
- A total of 90.0% of the cohort reported being in stable housing at the time of the survey; the figure was slightly lower for those who had transitioned (87.0%).
- A total of 27.1% of the cohort were DVA clients; 45.2% of these individuals were transitioned ADF members.

Transitioned cohort members

- The Transitioned ADF cohort members consisted of 44.3% Inactive Reservists, 30.4% who were Ex-Serving and 24.3% Active Reservists.
- The majority had discharged at their own request (68.7%), and 8.7% reported a medical discharge.

- About two-thirds were in employment (65.2%), the majority of these individuals working between 21 and 60 hours a week.
- Just over one in three reported a period of unemployment lasting at least three months since transition (34.8%).
- In relation to DVA support, one in three (34.8%) reported treatment support of some form (White or Gold Card).

Longitudinal health status

Mental health

- For all mental health measures there were small to moderate increases in symptoms over time and, correspondingly, small to moderate increases in the proportion of the cohort with subsyndromal or probable disorder.

Depressive symptoms

- Average depressive symptoms were low in the cohort at all time points but did increase with time, the largest change occurring between Times 2 and 3 ($M = 2.5$ vs $M = 5.1$).
- The majority of cohort members fell below both screening and epidemiological cut-offs for probable depressive episodes at Time 1 (91.5%), Time 2 (86.2%) and Time 3 (66.7%), there being a steady increase in the proportion with subsyndromal and probable disorder over time. At Time 3, 27.9% of the cohort were subsyndromal and 5.4% had probable depressive episodes.

Psychological distress

- Average psychological distress symptoms were low in the cohort at all time points. They were relatively stable between Time 1 ($M = 13.4$) and Time 2 ($M = 13.8$) and increased at Time 3 ($M = 16.6$).
- The majority of the MEAO Deployed Cohort fell below both screening and epidemiological cut-offs for probable psychological distress at Time 1 (84.1%), Time 2 (79.4%) and Time 3 (69.6%). The proportion of the cohort who were subsyndromal increased from Time 1 (12.1%) to Time 2 (16.6%), then remained stable at Time 3 (16.4%).
- A different pattern was observed in the case of probable disorder: the proportion of the cohort with probable psychological distress did not change between Time 1 (3.7%) and Time 2 (4.0%) but increased significantly at Time 3 (14.0%).

Posttraumatic stress symptoms

- There were small increases in mean posttraumatic stress symptoms in the cohort from Time 1 ($M = 20.0$) to Time 2 ($M = 22.3$) and again at Time 3 ($M = 25.3$).
- The majority of the cohort scored below subsyndromal and probable disorder cut-offs at Time 1, Time 2 and Time 3.
- The proportion of the cohort with subsyndromal posttraumatic stress symptoms nearly doubled from Time 1 (7.1%) to Time 2 (13.4%) and increased again, to 21.7%, at Time 3. The proportion of the cohort with probable PTSD was very low at all three time points but showed the same pattern of increase over time (Time 1, 0.2%; Time 2, 1.7%; Time 3, 3.6%).

Alcohol use and problem drinking

- There was very little variation in mean AUDIT (Alcohol Use Disorders Identification Test) scores over time in the cohort, there being no change from Time 1 ($M = 6.3$) to Time 2 ($M = 6.6$) and only a small increase at Time 3 ($M = 8.9$).
- Almost three-quarters of the cohort fell below subsyndromal and probable alcohol disorder cut-offs at Time 1 (71.2%) and Time 2 (72.1%); the proportion fell slightly, to 67.5%, at Time 3.

Almost one-third of the cohort scored above the screening cut-off on the AUDIT at Time 1 (28.1%), Time 2 (26.0%) and Time 3 (29.6%).

- Rates of probable alcohol disorder were extremely low in the cohort but showed a pattern of increase over time (Time 1, 0.7%; Time 2, 1.9%; Time 3, 2.9%).

Anger symptoms

- Mean anger scores increased over time (Time 1, M = 6.7; Time 2, M = 7.3; Time 3, M = 8.5). The proportion of participants with problematic anger also increased steadily from Time 1 through to Time 3 (Time 1, 5.5%; Time 2, 11.6%; Time 3, 19.2%).

Suicidality

- The proportion of the cohort with any suicidality increased slightly from Time 1 (2.2%) to Time 2 (3.6%) and increased dramatically at Time 3 (12.7%).
- No members of the cohort reported formulating a suicide plan or attempting suicide at Time 1 or Time 2; at Time 3, 2.6% of the cohort reported making a plan and 1.0% had made an attempt.

Lifetime and 12-month ICD-10 disorder

- Overall, members of the cohort who had transitioned from the ADF reported higher lifetime and 12-month rates of each ICD-10 mental disorder class compared with those who remained in the Regular ADF.
- Almost 80% of the cohort who had transitioned in 2015 met criteria for any lifetime ICD-10 mental disorder; this compares with two-thirds (66.7%) of those who remained in the Regular ADF.
- One in two cohort members who had transitioned met criteria for a mental health disorder in the preceding 12 months; this compares with about one in five of those who remained in the Regular ADF.
- Alcohol (Transitioned ADF, 59.7%; 2015 Regular ADF, 47.4%) and anxiety disorders (Transitioned ADF, 55.6%; 2015 Regular ADF, 32.5%) were the most prevalent lifetime disorder classes for the cohort. The rates of affective disorders were lower (Transitioned ADF: 37.5%; 2015 Regular ADF: 18.4%).
- Lifetime rates of PTSD were 29.2% for cohort members who had transitioned and 13.2% for those who had remained in the Regular ADF.
- Anxiety disorders were the most prevalent 12-month disorders in the cohort: 41.7% of transitioned cohort members and 18.4% of those who were still regular serving members met the ICD-10 criteria.
- Rates of 12-month alcohol disorders were low in the cohort, and the disorders were more commonly reported among members who had transitioned. The most common 12-month alcohol disorder class was alcohol dependence (Transitioned ADF, 9.7%; 2015 Regular ADF, 3.5%).

Physical health

- The mean number of physical health symptoms reported increased from Time 1 (M = 7.7, SE = 0.4) to Time 2 (M = 10.4, SE = 0.5) and was higher again at Time 3 (M = 12.8, SE = 0.5).
- Over 50% of participants fell within the pre-obese range (53.7%) at Time 1. This proportion increased to almost 60% (58.9%) at Time 2 and was higher still at Time 3 (66.3%).

Biological measures

- Overall, biological outcomes were well within the normal ranges for a healthy population. Only small changes were observed in the outcomes measured and for a number of markers no

changes were found, although there were some consistent patterns of change across groups of measures.

- A number of markers – interleukin 6, tumor necrosis factor alpha, C-reactive protein, cortisol and brain-derived neurotrophic factor – showed a pattern of increase between Time 1 and Time 2 and a subsequent decrease at Time 3.

Predicting long-term mental health

Psychological distress

- Previous deployments and career deployment exposure history were associated with elevated psychological distress at Time 3. Specifically:
 - The more previous deployments cohort members had before the index deployment, the greater the likelihood of having elevated psychological distress at Time 3.
 - Those with high or very high levels of deployment exposure were three times more likely to have elevated psychological distress at Time 3 compared with those with very low or low exposure.

Posttraumatic stress

- The number of lifetime trauma exposure types and career deployment exposure history were associated with elevated posttraumatic stress symptoms at Time 3. Specifically:
 - The number of lifetime trauma exposure types at Time 1 was a significant predictor of elevated posttraumatic stress symptoms at Time 3.
 - Cohort members with medium, high or very high levels of deployment exposure were three to five times more likely than those with very low exposures to have elevated posttraumatic stress symptoms at Time 3.

Physical health correlates of long-term mental health

- Cohort members with elevated psychological distress or posttraumatic stress symptoms at Time 3 reported higher numbers of physical health symptoms at all three time points.
- In general, pro-inflammatory markers were lower across time among those with elevated psychological distress or posttraumatic stress symptoms at Time 3.

Neurocognitive function

Neurocognitive function over time

The overall pattern of findings suggests that initial deployment and combat exposure can have lasting effects on resting brain state and attentional and memory processes.

Quantitative electroencephalography

- Beta power and alpha power showed reductions from Time 1 to Time 2 and these were sustained at Time 3. This is indicative of reduced cognitive engagement and reduced relaxed wakefulness. In contrast, theta and delta power increased from Time 1 to Time 2 and elevations were sustained at Time 3, suggesting an increase in memory processing.

***Working memory*¹**

- Reductions in P3 working memory amplitudes were observed over time, with successive reductions from Time 1 to Time 2 and then to Time 3. The reductions were most notable at the frontal and central electrodes. This component provides an objective measure of working memory functioning, and its amplitude is a measure of the efficiency of processing, greater

¹ The amplitude of the P3 is an indicator of the efficiency of processing, whereby greater amplitude reflects greater efficiency, so where working memory efficiency is discussed this reflects changes or differences in P3 amplitude. It should be noted that, while ERP data are used as a measure of working memory in this study, no corresponding neuropsychological assessments of working memory were included.

amplitude reflecting greater efficiency. The observed reductions are thus consistent with reduced efficiency of memory processes.

Neurocognitive function and elevated psychological distress and posttraumatic stress

Deployment appears to have an acutely altering effect on functioning within attentional orientation networks. The findings were as follows:

- Functional decrements in attentional networks were evident among ADF members with low psychological symptoms at Time 3 and those with elevated posttraumatic stress symptoms.
- Attentional hypervigilance was evident among those with elevated psychological distress symptoms at Time 3.
- Acute deployment-related effects appear to resolve in those with low symptoms or elevated psychological distress symptoms at Time 3.
- Acquired functional decrements appear to be progressively exacerbated in those with elevated posttraumatic stress, with executive memory network impairments also becoming evident in the long term.

Quantitative electroencephalography

- Together, the findings suggest that individuals who manifest psychological symptoms over time exhibit a range of distinct qEEG characteristics, with beta and theta power bands bearing the closest association with current psychological symptom status at Time 3. It appears that higher beta and theta power levels at Time 1 could potentially be vulnerability markers for the emergence of future psychological symptoms.

Working memory

- ERP (event-related potential) indices could serve as a marker of emerging subsyndromal distress in this population, with findings indicative of acutely acquired (that is, deployment-related) attentional network impairments followed by progressive exacerbation of these in the longer term. Although deployment appears to predominantly affect anterior attentional network functions, there could be progressive impacts on posterior executive memory network functions in the longer term. The findings also provide evidence that fronto-central amplitude reductions can pre-exist PTSD symptom onset, although these deficits might reflect higher cumulative trauma exposure and early signs of symptom development.

Injuries to the head and traumatic brain injury

Reported traumatic brain injury in Transitioned ADF and 2015 Regular ADF

Injuries to the head

- Similar proportions of Transitioned ADF members and 2015 Regular ADF members reported experiencing all types of injuries to the head except for injuring their head or neck in a fall/being hit by something (a lower proportion) or being nearby when an explosion/blast occurred (a greater proportion).
- Similar proportions of Transitioned ADF and 2015 Regular ADF reported that their injuries occurred during military service.
- The most commonly reported context for experiencing a head injury during cohort members' lifetime was being nearby when an explosion or blast occurred (Transitioned ADF, 69.7%; 2015 Regular ADF, 49.9%).

Reported lifetime traumatic brain injury and mild traumatic brain injury

- Similar proportions of Transitioned ADF and 2015 Regular ADF reported experiencing any TBI (mild, moderate or severe) in their lifetime (49.1% vs 47.4%).
- 2015 Regular ADF reported a higher mean number of lifetime TBIs than Transitioned ADF (M = 4.9 vs M = 3.4).

- The great majority of reported lifetime TBI was mild TBI: only four Transitioned ADF members (3.7%) and eleven 2015 Regular ADF members (2.9%) reported moderate or severe lifetime TBI.

Mental health, functional outcomes and post-concussive symptoms in cohort those with reported lifetime traumatic brain injury

- Transitioned ADF members generally had higher levels of posttraumatic stress symptoms, psychological distress and depressive symptoms than 2015 Regular ADF members, and this pattern was similar when comparing those with and without reported TBI.
- Within both the Transitioned ADF and the 2015 Regular ADF groups, posttraumatic stress symptoms, psychological distress and depressive symptoms were similar between those with and without reported TBI.
- Transitioned ADF (M = 10.7) and 2015 Regular ADF (M = 7.5) who reported lifetime TBI showed slightly higher scores on total global functioning impairment compared with those with no TBI (M = 8.8 and M = 4.9) and across all three domains of disability.
- Transitioned ADF generally had higher scores on total global functioning impairment than 2015 Regular ADF, and this pattern was similar when comparing those with reported TBI and those without reported TBI across the two groups, as seen for the psychological disorders.
- Mean post-concussion syndrome scores were greater among Transitioned ADF with a reported TBI (M = 6.2) compared with those with no reported TBI (M = 3.0). Mean PCS scores were similar in 2015 Regular ADF with a reported TBI compared with those with no reported TBI.
- Mean post-concussion syndrome scores were higher in Transitioned ADF (those with reported TBI and those without) compared with the respective subgroups in the 2015 Regular ADF.

Open Arms - Veterans and Families Counselling (formerly VVCS), is a national mental health service that provides 24-hour free and confidential counselling, group programs and suicide prevention training for current and ex-serving ADF personnel, and their families. To get support or to find out more, call 1800 011 046 or visit www.OpenArms.gov.au

The ADF Mental Health All-hours Support Line is a confidential telephone service for ADF members and their families available 24/7 on 1800 628 036 or if calling from overseas +61 2 9425 3878.

The ADF Health and Wellbeing Portal 'Fighting Fit' will direct you to a wide range of Defence websites containing information on ADF Health and Mental Health services and support <http://www.defence.gov.au/Health/HealthPortal/>