

Depression as a risk factor of Mild Cognitive Impairment in UK military veterans

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BACKGROUND & AIMS

- Depression is prevalent in military veterans^[1], and this is of particular concern as depression is a risk factor of Mild Cognitive Impairment (MCI) in the general population^[2].
- However, there are limited studies that have investigated if ageing military veterans in the UK with depression are at risk of MCI and if this differs to the general population.
- Therefore, this study aimed to compare the associated risk between depression and MCI in UK military veterans and the general population.

METHODS

- This was a retrospective cohort study which utilised data from the PROTECT study^[3]. The study comprised of 7084 participants at baseline who were followed-up at 3 timepoints between 2014-2021 (see figure 1).
- The following key measures and definitions were used at each timepoint:
 - Veteran status was defined as individuals who have left the UK Armed Forces.
 - Depression caseness was defined using the Patient health questionnaire, 9-items (PHQ-9).
 - MCI was defined as objective cognitive impairment (≥ 1 SD below the mean in either the digit span, paired associated Learning, verbal reasoning, and the self-ordered search test) and subjective cognitive impairment (using the IQCODE).
- Cox proportional regression models were used to examine time to MCI in military veterans and non-veterans with or without depression.

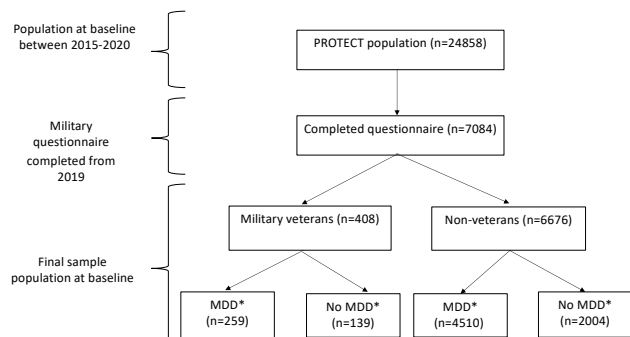


Figure 1. Summary of sampling

*The numbers may not add up due to missing data

RESULTS

- At baseline, military veterans were older than non-veterans (mean age: 65±8.7 vs 62±6.9 years) and were more likely to comprise of males (59.9%) compared to non-veterans who comprised more of females (78.4%).
- Depression caseness at baseline was more prevalent in non-veterans compared to military veterans (69% vs 65%, $p>0.05$).
- Although, the prevalence of MCI in individuals with depression was higher in military veterans compared to non-veterans (27.8% vs 22.9%, $p>0.05$) at baseline and this pattern remained stable throughout most of the study period (see figure 2).

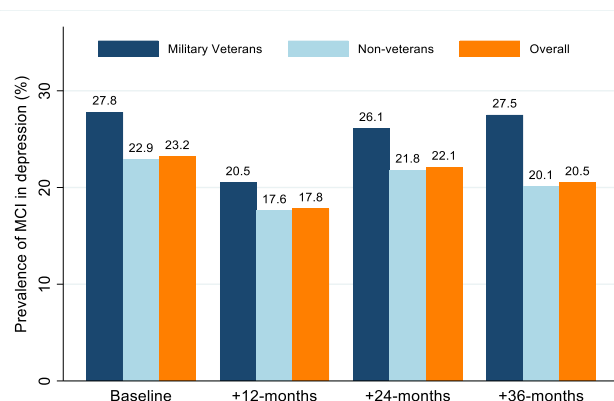


Figure 2. Bar chart presenting the prevalence of MCI in depression between military veterans and non-veterans over a +36-month period.

- Cox proportional regression was conducted to assess the risk of MCI in veterans and non-veterans with or without depression over the study period (unadjusted model) and after adjusting for various factors (see table 1).
- The unadjusted model showed the risk of MCI was higher in military veterans with depression (HR=1.77, 95% CI 1.48-2.11) compared to non-veterans with depression (HR=1.43, 95% CI 1.32-1.55).
- In the adjusted models, it showed the risk of MCI in military veterans with depression increased or remained stable after adjusting for comorbid mental health and family history of dementia.

Table 1. Risk of MCI by depression and military veteran status

	Unadjusted [HR (95% CI), p]	Adjusted [aHR (95% CI), p]				
		Model 1	Model 2	Model 3	Model 4	Model 5**
NV, MDD (-)	1 [Ref]	1 [Ref]	1 [Ref]	1 [Ref]	1 [Ref]	-
NV, MDD (+)	1.43 (1.32-1.55), $\leq 0.001^*$	1.46 (1.34-1.58), $\leq 0.001^*$	1.45 (1.32-1.59), $\leq 0.001^*$	1.40 (1.23-1.59), $\leq 0.001^*$	1.43 (1.32-1.56), $\leq 0.001^*$	-
MV, MDD (-)	1.22 (0.92-1.62), >0.05	1.09 (0.82-1.45), >0.05	1.28 (0.92-1.77), >0.05	0.98 (0.64-1.50), >0.05	1.22 (0.92-1.62), >0.05	1 [Ref]
MV, MDD (+)	1.77 (1.48-2.11), $\leq 0.001^*$	1.64 (1.37-1.96), $\leq 0.001^*$	1.81 (1.48-2.20), $\leq 0.001^*$	1.70 (1.31-2.20), $\leq 0.001^*$	1.77 (1.48-2.11), $\leq 0.001^*$	1.40 (1.04-1.89), 0.024*

Abbreviations: aHR-Adjusted hazard ratio, df-Degree of freedom, HR-Hazard ratio, MDD-Major depressive disorder, MV-Military veterans, NV-Non-veterans, Ref-Reference category
 Model 1: adjusted for demographics (age, gender, education, marital status, ethnicity, employment status).
 Model 2: adjusted for comorbid mental health (increased alcohol misuse, prior CMD)
 Model 3: adjusted for trauma (childhood and adulthood trauma)
 Model 4: adjusted for family history of dementia
 Model 5: adjusted for military service history (duration of service, branch of service, type of service, deployment history, last rank)
 **Only in military veterans
 +depression positive, -depression negative
 *Significant at $p\leq 0.05$

DISCUSSION

KEY FINDINGS

- In summary, the point estimates showed military veterans with depression are at an increased risk of MCI compared to non-veterans with depression. However due to overlapping confidence intervals, there was no overall difference between military veterans and non-veterans with depression.

GOALS FOR FUTURE RESEARCH

- Future research should explore the effect of neurobiological markers on this relationship and the subtypes of MCI.

References

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