

1 Article

2 Anger and Aggression in UK Treatment-Seeking Veterans with PTSD.

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7 **Abstract:** Prevalence rates of anger and aggression are often higher in military personnel, so it is
8 important to understand more about why this is and factors with which they are associated. Despite
9 this, there is little evidence relating to anger and aggression in UK veterans who are seeking
10 treatment for mental health difficulties such as PTSD. This study investigated the prevalence rates
11 of anger and aggression in this population, as well as the associations between anger and aggression,
12 and various sociodemographic, functioning and mental health variables. A cross-sectional design
13 was used, with participants completing a battery of self-report questionnaires. Prevalence rates for
14 significant anger and aggression were 74% and 28% respectively. Both women and those over 55
15 were less likely to report difficulties. Those with high levels of PTSD and other mental health
16 difficulties were more likely to report anger and aggression. Other factors related to anger and
17 aggression included childhood adversity; unemployment due to ill health; and a perceived lack of
18 family support. Findings show that veterans who are seeking support for mental health are likely
19 to experiencing significant difficulties with anger and aggression, especially if they have co-morbid
20 mental health difficulties. The associations between anger and aggression and other variables has
21 implications for the assessment and treatment of military veterans.

22 **Keywords:** military; veterans; anger; aggression; PTSD; mental health.

23

24 1. Introduction

25 Research has suggested that military personnel are more likely to experience difficulties with anger
26 and aggressive behaviours [1, 2]. Prevalence rates in military populations have been estimated at
27 29% for all types of physical assault, 12% for violent behaviour and 10% for physical assault [1, 3].
28 Anger in military populations is strongly associated with a range of other variables, including
29 mental health issues such as PTSD [4]. Specifically, anger and aggression in US veterans have been
30 associated with PTSD hyperarousal [5], PTSD re-experiencing [6], and depression [7]. The
31 relationship between anger and mental health is complex, but there is considerable overlap, with
32 some research showing that anger in military personnel is substantially accounted for by mental ill
33 health [2].

34 Anger and aggression have also been related to an individual's history, such as childhood
35 adversity, childhood antisocial behaviour [2], and issues relating to their military service, such as
36 having a combat role and experiencing multiple traumas whilst on deployment [1, 2]. The extent of
37 anger and aggression problems in military personnel is concerning given the challenges that this
38 population faces in readjusting following deployment [8], with ex-service personnel often over-
39 represented in prisons for violent offences and more likely to report committing violent crimes after
40 combat exposure [9, 10].

41 There have been several large-scale studies of anger and aggression using general military samples,
42 often including those serving in recent times in Iraq and Afghanistan. However, comparatively
43 little research has investigated the specific mental health needs of military veterans who are seeking
44 help for such difficulties. A recent study showed that 46% of UK veterans waited for more than five

45 years to seek help for their mental health difficulties, and that this was related to greater mental
46 health difficulties [11], strengthening the notion that there can be a long delay between deployment
47 and veterans seeking support for their mental health [12]. In this sample, the second most
48 commonly reported mental health issue was anger (76%), which has been strongly correlated with
49 PTSD in US and UK veterans [5 - 7, 11]. Given the apparently high prevalence rate of anger in
50 treatment-seeking veterans, and the potential implications for veterans' well-being, it is important
51 to further our understanding of these issues to help shape mental health services and improve
52 treatments for veterans.

53 The aims of the present study were firstly to investigate prevalence rates of anger and aggression in
54 a sample of treatment-seeking UK veterans. Secondly, we explored relationships between anger
55 and aggression, and a range of sociodemographic, functioning and mental health variables. Given
56 the past evidence showing the rates and associations of anger and aggression in the wider military
57 population, it is pertinent to investigate such links in treatment-seeking veterans as our
58 understanding of this group may be limited.

59 2. Materials and Methods

60 2.1. Procedure

61
62 A cross-sectional design was used, with questionnaire responses collected from a random sample of
63 treatment-seeking UK veterans recruited from Combat Stress (CS), a national charity providing
64 specialist mental health services to military veterans. Questionnaire data was collected pertaining to
65 anger and aggression, as well as a number of mental health and sociodemographic variables.

66
67 The questionnaire contained instructions informing participants that participation was voluntary;
68 that the research was being conducted independently from clinical services at CS, and that participant
69 input would not affect their treatment in any way. Questionnaires were sent to participants in the
70 post using a three-wave mail out strategy between April and August 2016. Individuals from whom
71 a response was not received were followed up by telephone. A research assistant made three attempts
72 to contact these individuals by telephone.

73 74 2.2. Participants

75
76 Data for the present study was taken from a wider investigation of the needs of treatment-seeking
77 veterans [11]. Participants were randomly sampled from a population of veterans who had sought
78 support from CS over a 12-month period, between 31st January 2015 and 1st February 2016. The
79 sample was drawn from the total number of veterans who had attended an initial assessment and at
80 least one further appointment during this period (N = 3335). From this group, a random 20% sample
81 was taken (N = 667), 67 of whom were removed prior to data collection either due to participant death
82 or not having sufficient contact information. The final sample size was 600. Of these, 403 (67%) were
83 recruited into the study and returned completed questionnaires. As demonstrated in a previous
84 paper, there were no significant differences between those who took part in the study and those who
85 did not [11].

86 87 2.3. Outcomes

88 89 2.3.1. Anger and aggression

90
91 Data on anger was collected using the *Dimensions of Anger Reactions* measure [13] (DAR-5). This five-
92 item measure gives an overall score to assess anger, with items including: 'I often find myself getting
93 angry at people or situations', and 'When I get angry, I get really mad'. Items are scored on a Likert

94 scale ranging from 0 – 4 and a total score is calculated by adding these together, with scores of 12 and
95 above indicating significant difficulties with anger.

96
97 In order to assess behaviours related to aggressive behaviour, we used a measure developed by the
98 Walter Reed Army Institute of Research [14], based on the Interpersonal Conflict Scale [15] and the
99 State/Trait Anger Scale [16]. This measure has been used previously in military samples [2, 14]. For
100 the purposes of this study, we termed this four-item measure the *Walter Reed Four* (WR-4). The WR-
101 4 included the following items: ‘How often did you get angry at someone and yell or shout’, ‘How
102 often did you get angry with someone and kick or smash something, slam the door, punch the wall
103 etc.’, ‘How often did you get into a fight with someone not in your family and hit the person’ and
104 ‘How often did you threaten someone with physical violence’. Respondents were asked to rate each
105 question with five options (never, once, twice, three or four times or five or more). These were scored
106 between 0 – 4 and a total score calculated by adding these together. Caseness was defined if
107 participant total scores were in the highest tertile.

108
109 2.3.2. Socio-demographic outcomes

110
111 Participants completed questionnaires relating to sociodemographic variables, including age, sex,
112 relationship status and employment status. Participants were also asked to state how many years had
113 passed between leaving the Armed Forces and seeking help, which was divided into <5 years and >5
114 years, and the date they left service which was used to determine if they were an early service leaver,
115 defined as leaving with under four years of continuous service.

116
117 Data was collected on childhood adversity, whereby participants rated 16 true or false statements
118 relating to events from childhood, e.g. ‘I regularly used to see or hear physical fighting or verbal
119 abuse between my parents’. These items were taken from a previous epidemiological study of health
120 and well-being in the UK military [17]. Participants responded on a binary yes/no scale to each item.
121 Total scores were added and those in the top tertile deemed as having high levels of childhood
122 adversity.

123
124 2.3.3. Functioning

125
126 A number of factors relating to general functioning were measured, including relationship and
127 employment status. Data was also collected about social support, with participants asked to complete
128 items on whether they felt supported by friends and whether they felt supported by family members.

129
130 The *Work and Social Adjustment Scale* [18] (WSAS) was used as a basic measure of functional
131 impairment, i.e. the extent to which health difficulties interfere with the ability to carry out day-to-
132 day tasks such as work and relationships. Totalled scores on this measure are categorised as mild
133 (1 - 10), moderate (11 – 20) or severe (21 +).

134
135 2.3.4. Health

136
137 A number of mental health outcomes were measured. PTSD was measured using the *PTSD Checklist*
138 [19] (PCL-5); a validated, 20-item measure assessing all domains of PTSD. Items are scored on a Likert
139 scale from 0 – 4, with total scores of 34+ indicating caseness for PTSD. Common mental health
140 difficulties (CMD) of anxiety and depression were assessed using the 12-item *General Health*
141 *Questionnaire-12* [20] (GHQ-12). Scores on the GHQ-12 range from 0 – 12, with caseness defined as a
142 score of 6+.

143

144 Data on alcohol use was collected using the *Alcohol Use Disorders Identification Test* [21] (AUDIT). This
145 ten-item measure gives an overall score to assess alcohol-related risk. Harmful drinking levels were
146 defined by scores of 16+.

147
148 Traumatic brain injury (TBI) was measured using the *Brain Injury Screening Index* [22]. Participants
149 were deemed to meet criteria for TBI if they reported experiencing a serious blow to the head plus
150 one of a series of symptoms as a result, such as alteration of mental state (e.g., dazed), gaps in memory
151 of over one hour, or loss of consciousness.

152 153 2.4. Analysis

154
155 The first stage of the analysis was to calculate prevalence rates for the DAR-5 and WR-4. Following
156 this, logistical regression models were fitted to explore associations between the DAR-5 and WR-4,
157 and sociodemographic factors. These were adjusted for age, sex and childhood adversity. This
158 analysis was repeated to explore associations between the DAR-5 and WR-4, and outcomes of
159 functioning and health. All analyses were conducted using STATA 13.0 (College Station, TX).

160 3. Results

161 3.1. Demographics

162
163 Of the sample of 600 veterans who were sent the questionnaire, 403 (67.2%) responded. The majority
164 were male (95.8% vs. 4.2% female). Most participants were over 45 years old (68.2%), and just over
165 two-thirds of participants were unemployed (68.1%). More were currently in a relationship (60.8%)
166 than not (39.2%). 12.6% were classified as early service leavers, and 45.7% had a period of five years
167 or more since leaving the military and seeking help from CS. Based on established cut-off scores, 74%
168 of participants reported significant difficulties with anger on the DAR-5. For aggressive behaviours,
169 28% of participants reported significant difficulties as indicated by scores on the WR-4.

170 171 3.2. Relationships between anger, aggression and other variables

172 173 3.2.1. Sociodemographic variables

174
175 Table one contains sociodemographic variables and their associations with anger and aggression.
176 Although only a small minority of participants were female, results suggest that women were less
177 likely to report issues with anger (DAR-5: Odds Ratio 0.34, 95% Confidence Interval 0.12 – 0.92).
178 Similarly, participants who were over the age of 55 were less likely to report aggressive behaviours
179 (WR-4: OR 0.34, 95% CI 0.16 – 0.72). Participants who reported a high number of childhood adversity
180 events were more likely to report difficulties with both anger and aggression (DAR-5: OR 3.43, 95%
181 CI 1.68 – 7.00; WR-4: OR 2.22, 95% CI 1.34 – 3.69).

182 183 3.2.2. Functioning

184
185 Table two presents functioning variables and their associations with anger and aggression. Social
186 support was a significant factor, with those reporting that they did not feel supported by their family
187 more likely to report problems with aggressive behaviours (WR-4: OR 3.10, 95% CI 1.59 – 6.01). This
188 was not replicated in those not feeling supported by friends. Employment status was also a significant
189 factor, with unemployment due to ill health associated with higher rates of both anger and aggression
190 (DAR-5: OR 2.80, 95% CI 1.58 – 4.96; WR-4: OR 2.62, 95% CI 1.51 – 4.55). Unemployment not due to
191 ill health was not a significant factor. Also, those participants who reported severe levels of functional
192 impairment were more likely to be experiencing high levels of both anger and aggression (DAR-5:
193 OR 2.89, 95% CI 1.77 – 4.74; WR-4: OR 1.01, 95% CI 1.00 – 2.79).

194

Table 1 Factors associated with anger and aggression

	Anger (DAR-5)		Aggression (WR-4)	
	n (%)	OR (95% CI)	n (%)	OR (95% CI)
<i>Sex</i>				
Male	286 (75.1)	1.00	112 (29.0)	1.00
Female	8 (47.1)	0.34 (0.12 to 0.92)*	2 (11.8)	0.38 (0.08 to 1.73)
<i>Age group</i>				
< 35	37 (75.5)	1.00	21 (42.9)	1.00
35-44	72 (76.6)	1.10 (0.48 to 2.54)	27 (28.4)	0.54 (0.26 to 1.14)
45-54	83 (76.9)	1.19 (0.52 to 2.75)	36 (32.7)	0.68 (0.33 to 1.42)
55+	102 (69.4)	0.80 (0.36 to 1.81)	30 (20.1)	0.34 (0.16 to 0.72)*
<i>Years to seek help</i>				
<5 years	153 (72.9)	1.00	58 (27.6)	1.00
5 years>	141 (75.0)	1.25 (0.76 to 2.07)	56 (29.0)	1.35 (0.84 to 2.19)
<i>Childhood adversity</i>				
Low group	214 (69.5)	1.00	75 (24.0)	1.00
High group	80 (88.9)	3.43 (1.68 to 7.00)*	39 (43.3)	2.22 (1.34 to 3.69)*
<i>Early service leaver</i>				
No	262 (74.0)	1.00	100 (28.0)	1.00
Yes	32 (72.7)	0.89 (0.42 to 1.88)	14 (30.4)	1.00 (0.49 to 2.04)

Note. *= $p \leq 0.05$. OR=Odds Ratio. 95% CI=95% Confidence Intervals. Odds Ratios adjusted for all other variables in table.

195

Table 2 Associations between factors related to functioning and anger and aggression

	Anger (DAR-5)		Aggression (WR-4)	
	n (%)	OR (95% CI)	n (%)	OR (95% CI)
<i>Feeling supported by friends</i>				
Yes	195 (73.3)	1.00	77 (28.6)	1.00
No	76 (81.7)	1.69 (0.90 to 3.16)	30 (31.9)	1.16 (0.69 to 1.97)
<i>Feeling supported by family</i>				
Yes	238 (72.3)	1.00	83 (25.0)	1.00
No	38 (82.6)	1.97 (0.86 to 4.51)	23 (50.0)	3.10 (1.59 to 6.01)*
<i>Relationship Status</i>				
In relationship	196 (72.9)	1.00	69 (25.3)	1.00
Single	98 (76.0)	1.37 (0.81 to 2.31)	45 (34.6)	1.62 (1.01 to 2.62)*
<i>Employment status</i>				
Working	83 (67.5)	1.00	27 (21.4)	1.00
Not working	65 (65.7)	0.97 (0.50 to 1.89)	20 (20.0)	1.31 (0.64 to 2.68)
Ill not working	146 (83.0)	2.80 (1.58 to 4.96)*	67 (37.9)	2.62 (1.51 to 4.55)*
<i>Functional impairment (WSAS)</i>				
Mild / moderate	80 (59.7)	1.00	28 (20.7)	1.00
Severe (21+)	214 (81.1)	2.89 (1.77 to 4.74)*	86 (32.1)	1.01 (1.00 to 2.79)*

Note. *= $p \leq 0.05$. OR=Odds Ratio. 95% CI=95% Confidence Intervals. Odds Ratios adjusted for age, sex and childhood adversity.

196

197

198 3.2.3. Health

199

200 Table three presents associations between anger, aggression and different health variables. The most
201 strongly associated variable was PTSD, with those meeting case criteria for PTSD being more likely
202 to report difficulties with both anger and aggressive behaviours (DAR-5: OR 10.70, 95% CI 5.79 –
203 19.60; WR-4: OR 8.71, 95% CI 2.99 – 25.40). The same associations were true of common mental health
204 difficulties such as depression and anxiety (DAR-5: OR 4.14, 95% CI 2.47 – 6.94; WR-4: OR 6.00, CI
205 2.97 – 12.10), and difficulties with alcohol misuse (DAR-5: OR 2.08, 95% CI 1.08 – 4.01; WR-4: OR
206 2.05, 95% CI 1.21 – 3.47).

207

Table 3 Health Factors associated with anger and aggression

	Anger (DAR-5)		Aggression (WR-4)	
	n (%)	OR (95% CI)	n (%)	OR (95% CI)
<i>PTSD (PCL-5)</i>				
Not a case	23 (31.9)	1.00	4 (5.6)	1.00
Case (38+)	271 (83.1)	10.7 (5.79 to 19.6)*	110 (33.2)	8.71 (2.99 to 25.4)*
<i>CMD (GHQ-12)</i>				
Not a case	60 (55.1)	1.00	11 (10.0)	1.00
Case (4+)	234 (81.0)	4.14 (2.47 to 6.94)*	103 (35.5)	6.00 (2.97 to 12.1)*
<i>Alcohol (Audit)</i>				
Not a case	225 (71.2)	1.00	79 (24.8)	1.00
Case (16+)	69 (84.2)	2.08 (1.08 to 4.01)*	35 (41.7)	2.05 (1.21 to 3.47)*
<i>Brain Injury</i>				
Negative	148 (71.5)	1.00	58 (27.5)	1.00
Positive	146 (76.4)	(1.24 (0.78 to 1.98)	56 (29.2)	1.04 (0.66 to 1.65)

Note. *= $p \leq 0.05$. CMD=Common Mental Health Disorders. OR=Odds Ratio. 95% CI=95% Confidence Intervals.

Odds Ratios adjusted for age, sex and childhood adversity.

208

209 4. Discussion

210 This study observed that nearly three quarters of treatment-seeking veterans in this sample
211 reported significant difficulties with anger, and more than a quarter reported problems with
212 aggressive behaviour. Furthermore, anger and aggression were strongly associated with PTSD, and
213 also associated with common mental health difficulties, alcohol misuse, and functional impairment.
214 Links between anger and PTSD and other mental health disorders have been found previously [e.g.
215 4], but this is the first study to show this relationship in veterans who are seeking help for their
216 mental health.

217 One possible explanation may be that some PTSD, depression or anxiety symptoms overlap with
218 anger and aggression. For example, irritability is a common feature of PTSD, which, given the
219 association between anger and PTSD, raises the question of whether anger in treatment-seeking
220 veterans is a separate construct, or can be explained by its relation to other mental health
221 difficulties. Indeed, past research has suggested that the strong association between anger and
222 mental health difficulties is due to the overlap of these conditions within the individual [2].

223 Previous research has found that after deployment, military personnel who experienced more
224 traumatic events had higher levels of anger [1], which might partly explain the high prevalence
225 rates of anger and aggression in the current sample, if we are to assume that they had experienced
226 traumas that were related to the fact that they were seeking support. The prevalence of anger and
227 aggression might also be explained in part by the military culture in which veterans might have
228 been required to use acts of aggression in their work. Furthermore, most of the participants in this
229 sample were men, and past research has illustrated the existence of a 'macho' culture within the

230 armed forces [23], in which the expression of anger and aggression might be a more readily
231 accepted method of displaying emotion.

232 An association was observed between problems with anger and aggression and higher rates of
233 childhood adversity. This finding is supported by large-scale research showing strong relationships
234 between adverse childhood experiences (ACEs) and an array of difficulties in later life, including
235 for mental health and violent behaviours [24, 25]. It has also been suggested that recruits into the
236 military are often from disadvantaged backgrounds [10], which might explain the prevalence of
237 childhood adversity and the increased prevalence of anger and aggression frequently observed in
238 military populations.

239 The finding that those who were unemployed due to ill health were more likely to report anger and
240 aggression was notable, particularly because those who were unemployed not due to ill health did
241 not report such difficulties. This could in part be explained if the illnesses in question were mental
242 health related, given the association here between anger, aggression and mental health. Similarly,
243 those who had the most severe interference with day-to-day functioning might be those who have
244 the biggest mental health difficulties which might explain the association between WSAS scores and
245 anger and aggression.

246 Participants were more likely to report problems with aggressive behaviour if they were single, or if
247 they did not feel supported by their family. Past research has suggested that social support can help
248 to reduce anger in people with PTSD [26], although the results in the present study relate to
249 aggression, not anger. The fact that perceived support of family but not friends was significant here,
250 could suggest that there is something important about families in the role of aggression in the
251 context of treatment-seeking veterans. Similar findings have been reported elsewhere in a sample of
252 POWs [27], and in an adolescent sample, where anger expression was more likely in those who did
253 not perceive support from family, which was not replicated for support from friends [28]. There is
254 evidence for the notion that social support and family support are important in overcoming PTSD
255 and other mental health difficulties [29 – 32], plus there is evidence that social support improves
256 treatment efficacy for PTSD [33]. This finding suggests that those who are not in a relationship or
257 don't feel supported by family are more likely to act on their anger. It may be that close family
258 support is a protective factor stopping some from acting out on their anger, or that those who do
259 not perceive support have been alienated from partners or family members due to their aggressive
260 behaviours.

261 262 4.1. Limitations

263 Due to the cross-sectional design of this study, it is not possible to determine causality relating to
264 the associations found. For example, is it the case that veterans display aggression because they
265 don't have support from family, or is it the case that their aggression has caused strain in family
266 relationships? With other variables, such as childhood adversity, we know little from the present
267 study about the mechanisms by which this might relate to anger and aggression, although theories
268 from elsewhere in the wider literature might offer suitable explanations, such as the role of
269 childhood adversity on the development of emotional regulation [34]. This study found that some
270 variables were associated with anger but not aggression, or vice versa. It was beyond the scope of
271 the present study to investigate why this occurred, and future research might adopt different
272 designs such as qualitative methods in order to explore this. The current sample was taken from a
273 population of veterans who were actively seeking treatment from a national veterans mental health
274 charity. CS receives approximately 2,500 new referrals per year [12], so the current sample
275 represents a significant number of treatment-seekers but may not be generalisable to all treatment
276 seekers.

277 4.2. Implications

278 Findings from the present study suggest that anger and aggression are a significant part of the
279 difficulties faced by the treatment-seeking veteran population. Also, both anger and aggressive
280 behaviours are strongly related to other comorbid mental health difficulties, such as PTSD. This
281 could be important in identifying mental health difficulties in veterans, if for example a veteran
282 presents with anger, this could be used as a way in to discuss other difficulties they may be
283 experiencing. Research has shown that there can be a long gap between a veteran completing
284 military service and seeking help for mental health [35], so increasing our knowledge of the main
285 signs and symptoms could help increase the number who are identified and then able to access
286 appropriate support. These findings suggest that anger and aggression should be routinely
287 screened for in mental health assessments of veterans and appropriate treatments offered. Also, it
288 may be pertinent in mental health settings to assess for risk of aggressive behaviours.

289 5. Conclusions

290 This study showed that veterans who are seeking support with their mental health are likely to be
291 having significant difficulties with anger and aggression, especially if they have other comorbid
292 mental health difficulties. Experiencing childhood adversity, being unemployed due to ill health,
293 being single and perceiving no family support were also related to higher levels of anger and/or
294 aggression. Being female and over 55 years old were associated with reduced anger and aggression
295 respectively.

296 Given the high prevalence rates of anger and aggression in treatment-seeking veterans, there is a
297 need to ensure that appropriate forms of assessment and support are available, and the presence of
298 anger or aggression could provide a useful bridge for discussing wider mental health difficulties,
299 given their strong association. While the present study is limited by its cross-sectional design, it
300 provides useful insights into the needs of this population.

301

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