



## The nature of posttraumatic stress disorder in treatment-seeking first responders

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### ABSTRACT

**Background:** Approximately 10% of first responders report posttraumatic stress disorder (PTSD). Although reports within first responders suggest that they have distinct symptom presentations, there is a need to understand how the clinical profiles of first responders may differ from others seeking treatment for PTSD.

**Objective:** This study compared the PTSD symptom profiles of first responder and civilians seeking treatment for PTSD.

**Method:** Participants self-referred to the Traumatic Stress Clinic (University of New South Wales, Sydney) for enrolment in out-patient treatment trials for PTSD. Participants comprised people of mean age 41.72 years ( $SD = 10.71$ ) who met DSM-IV criteria for PTSD. The sample was composed of 128 first responders and 182 civilians. Clinician-administered interviews of PTSD (Clinician-Administered PTSD Scale) and depression were conducted, as well as measures of self-report measures of depression, alcohol use, posttraumatic appraisals, and anger.

**Results:** First responders reported greater rates of dysphoric cluster of symptoms, including diminished interest, emotional numbing, and social detachment, and less psychological reactivity and avoidance of situations, than civilians with PTSD. Beyond PTSD symptoms, first responders also reported more severe levels of depression and suppressed anger.

**Conclusions:** These findings indicate that treatment-seeking first responders present with a distinct clinical profile that is characterized by dysphoric symptoms. These symptoms can predict poor treatment response and require specific attention in treating PTSD in first responders.

### La naturaleza del trastorno de estrés postraumático en los primeros respondedores que buscan tratamiento

**Antecedentes:** Aproximadamente el 10% de los primeros respondedores informan de un trastorno de estrés postraumático (TEPT). Aunque los informes dentro de los primeros respondedores sugieren que tienen presentaciones de síntomas distintos, es necesario comprender cómo los perfiles clínicos de los primeros respondedores pueden diferir de otros que buscan tratamiento para el TEPT.

**Objetivo:** Este estudio comparó los perfiles de los síntomas del TEPT de los primeros respondedores y de los civiles que buscan tratamiento para el TEPT.

**Método:** Los participantes se autorreferían a la Clínica de Estrés Traumático (Universidad de Nueva Gales del Sur, Sydney) para inscribirse en ensayos de tratamiento ambulatorio para el TEPT. Los participantes eran personas con una edad media de 41,72 años ( $SD = 10,71$ ) que cumplían los criterios del DSM-IV para el TEPT. La muestra estaba compuesta por 128 primeros respondedores y 182 civiles. Se llevaron a cabo entrevistas administradas por el clínico sobre el TEPT (Clinician-Administered PTSD Scale) y depresión, así como medidas de auto-reporte sobre la depresión, el consumo de alcohol, las valoraciones postraumáticas y la ira.

**Resultados:** Los primeros respondedores informaron mayores tasas de síntomas disfóricos, incluyendo la disminución del interés, el embotamiento emocional y el desapego social, y menos reactividad psicológica y evitación de situaciones, que los civiles con TEPT. Además de los síntomas del TEPT, los primeros respondedores también informaron de niveles más graves de depresión y de ira reprimida.

**Conclusiones:** Estos resultados indican que los primeros respondedores que buscan tratamiento presentan un perfil clínico distinto que se caracteriza por síntomas disfóricos. Estos síntomas pueden predecir una mala respuesta al tratamiento y requieren una atención específica en el tratamiento del TEPT en los primeros respondedores.

### 寻求治疗的急救人员中创伤后应激障碍的性质

**背景:** 大约 10% 的急救人员报告有创伤后应激障碍 (PTSD)。尽管急救人员内部的报告表明其有不同症状表现,有必要了解急救人员的临床剖面与寻求 PTSD 治疗的其他人有何不同。

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### PALABRAS CLAVE

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### 关键词

创伤后应激障碍; 急救人员; 紧急服务; 精神痛苦; 情感麻木

### HIGHLIGHTS

- Treatment-seeking first responders report greater rates of emotional numbing, avoidance, depression and suppressed anger than civilians, suggesting that treatment of PTSD in first responders should accommodate their specific symptom profiles.

**目的:** 本研究比较了急救人员和寻求 PTSD 治疗平民的 PTSD 症状剖面。

**方法:** 参与者自荐到创伤应激诊所(新南威尔士大学, 悉尼)参加 PTSD 门诊治疗试验。参与者由平均年龄为 41.72 岁 ( $SD = 10.71$ ) 且符合 DSM-IV PTSD 标准的人组成。样本由 128 名急救人员和 182 名平民组成。进行了临床 PTSD (临床用 PTSD 量表) 和抑郁的访谈, 以及抑郁, 酒精使用, 创伤后评估和愤怒的自我报告测量。

**结果:** 与患有 PTSD 的平民相比, 急救人员报告了更高的精神痛苦症状簇发生率, 包括兴趣减弱, 情感麻木和社会疏离, 以及较少的心理反应和回避情况。除了 PTSD 症状外, 急救人员还报告了更严重的抑郁和压抑愤怒。

**结论:** 这些发现表明, 寻求治疗的急救人员呈现出以精神痛苦症状为特征的独特临床剖面。这些症状可以预测治疗反应不佳, 需要在对急救人员治疗 PTSD 时特别关注。

First responders, including police officers, firefighters, and ambulance personnel, are among the most regularly trauma-exposed groups of workers in the community. Not surprisingly, numerous studies attest to the higher rates of psychological distress in first responders (Inslicht et al., 2010; Pietrzak, Feder, & Singh, 2014), with one meta-analysis of 28 studies indicates that 10–11% of first responders experience posttraumatic stress disorder (PTSD) (Berger et al., 2012; Petrie et al., 2018). Compounding the problem of full PTSD presentations, studies have also reported that subsyndromal PTSD is observed in a further 7–16% of first responders (Maia et al., 2007; Martin, Marchand, Boyer, & Martin, 2009).

Apart from higher rates of PTSD in first responders, there is also suggestive evidence that these personnel display particular distinctive clinical presentations. First responders report high levels of comorbidity, including depression (Tak, Driscoll, Bernard, & West, 2007), panic disorder (Pietrzak et al., 2012), somatic difficulties (Witteveen et al., 2006) and relationship difficulties (Cone et al., 2015). report elevated rates of low mood (Pietrzak et al., 2012), relationship difficulties (Cone et al., 2015), and rates of suicide (Milner, Witt, Maheen, & LaMontagne, 2017), and suicidality (Stanley, Hom, & Joiner, 2016). Emotional numbing is also purportedly common in first responders emotional numbing (Galatzer-Levy, Madan, Neylan, Henn-Haase, & Marmar, 2011), with one study of more than 10,000 rescue workers involved in the aftermath of the World Trade Center terrorist attacks found a five-factor structure of PTSD that comprised re-experiencing, avoidance, numbing, anxious arousal, and dysphoric arousal (Pietrzak, Feder, & Schechter, 2014). Alcohol abuse is also prevalent amongst first responders (North et al., 2002), with evidence that as much as 40% of respondents in one study engaged in hazardous drinking behaviours (Haddock et al., 2012).

There are many commentaries suggesting that first responders have distinct clinical needs (Gilmartin, 2002). To date, however, there is no evidence directly comparing first responders and civilians in terms of presenting clinical needs. It has been proposed that as time elapses for first responders with stress reactions, more dysphoric or depressive states can become important (Pietrzak, Feder, & Schechter, 2014). A proposed mechanism for the greater dysphoric symptoms in first

responders has been that prolonged exposure to multiple traumatic events, the cumulative effects of PTSD symptoms over time, and the common coping strategy of inhibiting emotional expression reported in first responders, may contribute to a stronger dysphoric presentation (Bryant, 2021). This raises the important issue of the nature of PTSD in first responders and the extent to which it may differ from the nature of PTSD in mainstream populations. Although numerous commentaries have noted that PTSD presentations in first responders may be distinct from other populations (Gilmartin, 2002), this has not been empirically investigated. Accordingly, this study evaluated the symptom presentations of first responders and civilians who attended for treatment for PTSD and related psychopathology. On the premise that first responders may present with more dysphoric symptoms, it was hypothesized that relative to civilians, first responders would be more likely to present with emotional numbing, detachment, disinterest, and depression. Moreover, it was expected that first responders would have more alcohol abuse than civilians.

## 1. Method

### 1.1. Participants

All participants were assessed as part of recruitment for separate controlled trials of trauma-focused psychotherapy for first responders (Bryant et al., 2019) or civilians (Bryant et al., 2013). Both trials were approved by the University of New South Wales Human Research Ethics. All participants provided written informed consent prior to being administered the assessment battery, and all assessed participants were included in the current analysis regardless of whether they met entry criteria for the trials. Participants were 310 treatment-seeking patients of mean age 41.72 years ( $SD = 10.71$ ), of whom 128 were first responders and 182 were civilians. Participants were recruited between 5 July 2008 and 15 May 2016. As a result of the dates of study recruitment, the definition of PTSD followed the DSM-IV criteria. All patients met DSM-IV criteria for PTSD, as assessed by Masters or Doctoral level clinical psychologists using the Clinician Administered PTSD Scale (CAPS, (Blake et al., 1995)). More first responders

**Table 1.** Participant characteristics.

|                            | Civilians<br>( <i>N</i> = 182) | First Responders<br>( <i>N</i> = 128) |
|----------------------------|--------------------------------|---------------------------------------|
| Gender                     |                                |                                       |
| Male                       | 85 (46.7%)                     | 105 (82.0%)                           |
| Female                     | 97 (53.3%)                     | 23 (18.0%)                            |
| Age (years)                | 37.78 (12.64)                  | 42.91 (9.02)                          |
| Time Since Trauma (months) | 41.9 (72.2)                    | 97.6 (112.1)                          |
| Major Depression           | 134 (60.9%)                    | 73 (57.0%)                            |
| Index Trauma               |                                |                                       |
| Road accident              | 109 (49.1%)                    | 0 (0.0%)                              |
| Assault                    | 113 (50.9%)                    | 0 (0.0%)                              |
| First responder events     | 0 (0.0%)                       | 128 (100%)                            |
| Time Since Trauma (months) | 15.42 (15.91)                  | 11.89 (11.44)                         |

Standard deviations appear in parentheses except where otherwise stated.

were male (105, 82.0%) than in the civilian group (85, 46.7%),  $\chi^2 = 39.53$ ,  $p < .001$ . In terms of the index trauma, whereas all first responders reported a wide variety of emergency service critical incidents, civilian patients presented for treatment following motor vehicle accidents ( $n = 89$ ; 48.9%) or assaults ( $n = 93$ ; 51.1%). Participant characteristics are presented in Table 1.

## 1.2. Measures

PTSD was assessed using the Clinician Administered PTSD Scale-IV (CAPS-IV; Blake et al., 1995). The CAPS is a structured clinical interview that possesses good sensitivity (.84) and specificity (.95) relative to the SCID PTSD diagnosis, and also possesses sound test-retest reliability (.90).

The Mini-International Neuropsychiatric Interview (version 5.5; MINI; Sheehan et al., 1998) was used to assess comorbid Axis I depression and anxiety disorders. The MINI possesses strong psychometric properties, including inter-rater reliability (kappa: 0.88–1.00), test-retest reliability (0.76–0.93), and strong specificity for diagnoses (0.72–0.97) (Lecrubier et al., 1997).

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) was used to obtain a continuous measure of depressive symptomatology. The BDI-II is a 21-item self-report measure which has strong internal consistency (0.90) and test-retest reliability (0.73–0.96) (Wang & Gorenstein, 2013).

The Alcohol Use Disorder Identification Test (AUDIT; Babor, de la Fuente, Saunders, & Grant, 1989) is a 10-item measure that assesses active, hazardous or harmful alcohol use. The AUDIT has sound internal consistency (0.80) and test-retest reliability (0.6–0.8) (de Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009).

Trauma-related appraisals were assessed with the Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). The PTCI is 36-item self-report scale that yields three factors, including negative cognitions about self, negative cognitions about the world, and self-blame. The PTCI possesses good internal consistency (alpha = .97) and discriminant

ability to differentiate people with and without PTSD (sensitivity = .78, specificity = .93).

The State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988) assesses trait levels of three types of anger; anger expression towards others (anger-out), suppressed anger (anger-in), and controlled anger (anger-control). The internal consistency of the STAXI subscales range from .82 to .89 (Forgays, Forgays, & Spielberger, 1997).

## 1.3. Data analysis

Presence of a symptom followed the '1–2' scoring method recommended for the CAPS, in which a symptom is deemed present if the person is scored at least 1 for frequency and 2 for intensity of the symptom (Weathers, Ruscio, & Keane, 1999). To determine the relative proportions of participants in each group who reported each symptom, proportions were determined and odds ratios calculated; to accommodate the 17 comparisons made for the PTSD symptoms, the alpha was subjected to a Bonferroni adjustment, resulting in  $\alpha = .003$ . Comparisons between the two conditions on the dimensional self-report measures were investigated in a multivariate analysis of variance (MANOVA).

## 2. Results

### 2.1. Participant characteristics

Table 1 presents the participant characteristics. There were proportionally more males in the emergency responder group than the civilian group [ $\chi^2_{350} = 40.81$ ,  $p < .001$ ]. First responders were older than civilians [ $t_{348} = 40.81$ ,  $p < .001$ ], and more time had elapsed since their trauma exposure [ $t_{348} = 5.64$ ,  $p < .001$ ].

### 2.2. Nature of posttraumatic stress disorder

Table 2 presents the incidence of each PTSD symptom for the two groups. Civilian patients reported higher rates of psychological reactivity ( $p = .002$ ) and avoidance of situations ( $p < .001$ ). Conversely, first responders reported higher rates of diminished interest ( $p < .001$ ), numbing ( $p < .001$ ), and detachment ( $p < .001$ ).

### 2.3. Associated psychopathology

The two groups did not differ in rates of major depression (Table 1).

Table 3 presents the mean scores of psychopathology scores for the two groups. The 2 (Condition)  $\times$  8 (Outcome Measure) MANOVA of dimensional measures indicated a significant main effect for Condition,  $F_{9,301} = 6.09$ ,  $p < .001$ ,  $\eta^2 = 0.27$ . First responders had

**Table 2.** Incidence of PTSD symptoms (% , N).

|                          | Civilians<br>(N = 182) | First Responders<br>(N = 128) | OR<br>(95% CI)   | P    |
|--------------------------|------------------------|-------------------------------|------------------|------|
| Intrusions               | 81.3 (148)             | 82.8 (106)                    | 1.11 (.61–2.00)  | .74  |
| Nightmares               | 57.7 (105)             | 78.1 (100)                    | 2.62 (1.57–4.37) | .001 |
| Flashbacks               | 29.7 (54)              | 21.9 (28)                     | 0.66 (.39–1.12)  | .13  |
| Psychological reactivity | 96.2 (175)             | 85.9 (110)                    | 0.24 (.10–.60)   | .002 |
| Physiological reactivity | 80.2 (146)             | 82.0 (105)                    | 1.12 (.63–2.01)  | .69  |
| Avoidance of thoughts    | 91.2 (166)             | 91.4 (117)                    | 1.02 (.46–2.29)  | .95  |
| Avoidance of situations  | 87.9 (160)             | 75.8 (97)                     | 0.43 (.24–.78)   | .006 |
| Amnesia                  | 34.8 (63)              | 13.3 (17)                     | 0.29 (.16–.52)   | .001 |
| Diminished interest      | 76.4 (139)             | 93.0 (119)                    | 4.09 (1.91–8.74) | .001 |
| Detachment               | 71.4 (130)             | 86.7 (111)                    | 2.61 (1.43–4.78) | .002 |
| Numbing                  | 67.0 (122)             | 85.9 (110)                    | 3.00 (1.67–5.40) | .001 |
| Foreshortened future     | 43.4 (79)              | 41.4 (53)                     | 0.73 (.58–1.46)  | .73  |
| Sleep problems           | 90.1 (163)             | 88.3 (113)                    | 0.83 (.40–1.72)  | .62  |
| Irritability             | 84.6 (154)             | 82.0 (105)                    | 0.83 (.45–1.52)  | .55  |
| Concentration deficits   | 84.1 (153)             | 92.2 (118)                    | 2.23 (1.05–4.77) | .04  |
| Hypervigilance           | 92.3 (168)             | 89.1 (114)                    | 0.68 (.31–1.48)  | .33  |
| Startle response         | 75.3 (137)             | 71.1 (91)                     | 0.41 (.48–1.34)  | .41  |

**Table 3.** Mean psychopathology scores.

|                  | Civilian      | First Responders | p     |
|------------------|---------------|------------------|-------|
| BDI-II           | 30.03 (10.37) | 30.08 (10.05)    | 0.98  |
| PTCI-Self        | 4.21 (1.29)   | 4.49 (1.07)      | 0.14  |
| PTCI-World       | 5.42 (1.03)   | 5.75 (3.07)      | 0.44  |
| PTCI-Blame       | 2.73 (1.45)   | 3.04 (1.67)      | 0.25  |
| AUDIT            | 4.45 (5.56)   | 8.96 (8.53)      | <.001 |
| Anger In         | 19.22 (4.33)  | 21.43 (4.88)     | 0.002 |
| Anger Out        | 17.68 (4.45)  | 16.21 (5.07)     | 0.06  |
| Anger Control    | 21.22 (5.29)  | 19.69 (4.73)     | 0.06  |
| Anger Expression | 31.26 (10.60) | 34.40 (10.96)    | 0.07  |

BDI-II = Beck Depression Inventory. PTCI = Posttraumatic Cognitions Inventory. AUDIT = Alcohol Use Identification Test.

higher on the AUDIT [ $p < .001$ ] and suppressed anger [ $p = .002$ ] than civilians.

#### 2.4. Sensitivity analysis on male participants

In recognition of the disproportionate number of males in the first responder (82.0) and civilian (46.7%) samples, a sensitivity analysis was conducted that focused only on male participants (see Supplement). This analysis focused on 85 civilian males and 105 first responder males. Civilians no longer reported more psychological reactivity or avoidance of intrusions, and first responders no longer reported more detachment. First responders reported less amnesia ( $p = .003$ ), and more diminished interest ( $p = .003$ ) and numbing ( $p < .001$ ). The MANOVA of dimensional measures indicated a significant effect for Condition,  $F_{9,181} = 3.57$ ,  $p < .001$ ,  $\eta^2 = 0.24$ . More male first responders reported alcohol abuse ( $p = .04$ ), and suppressed anger ( $p = .04$ ) than male civilians.

### 3. Discussion

This study indicates the first responders who attend for treatment for PTSD are qualitatively distinct from civilians with PTSD. Specifically, first responders present for treatment with more dysphoric clinical presentations, including diminished interest, emotional

numbing, and social detachment, and less psychological reactivity and avoidance of situations, than civilians with PTSD. Further, first responders reported more severe levels of depression, suppressed anger, and alcohol abuse.

There is increasing evidence from factor analytic studies that dysphoric symptoms represent a specific group of PTSD symptoms that are distinct from fear-based symptoms (Elhai & Palmieri, 2011). It is noteworthy that whereas re-experiencing and arousal symptoms are more prevalent in PTSD than numbing (North, Oliver, & Pandya, 2012) and may be reflective of more normative stress responses (Ehlers, Mayou, & Bryant, 1998; McMillen, North, & Smith, 2000), the numbing cluster of symptoms is more predictive of PTSD and indicative of the core psychopathology of the disorder (Foa, Riggs, & Gershuny, 1995). The dysphoric symptoms can also be attributed to the prolonged work strain of many first responders, which can lead to burnout; this factor has been noted as a risk for psychological problems in first responders (Martinussen, Riachardsen, & Burke, 2007; Swatt, Gibson, & Piquero, 2007), and may be particularly relevant for dysphoric symptoms. The prominence of diminished interest, emotional numbing, and social detachment in first responders attending treatment is important because this cluster of symptoms has particular clinical significance. Studies have indicated that they are strongly predictive of functional impairment (North, Van Enkevort, Hong, & Suris, 2020), relationship difficulties (Malaktaris et al., 2019), deficits in executive functioning (Olf, Polak, Witteveen, & Denys, 2014), comorbidity (McMillen et al., 2000), suicide risk (Afzali, Sunderland, Batterham, Carragher, & Slade, 2017) and violent behaviour (Maguen, Stalnaker, McCaslin, & Litz, 2009). Importantly, emotional numbing has also been shown to be predictive of poor response to pharmacotherapy for PTSD

(Byrne, Krystal, Rosenheck, Vessicchio, & Pietrzak, 2017). First responders can often develop strategies to detach themselves from emotional states to allow them to cope with challenging tasks. When this strategy becomes chronic and entrenched, it may represent one of the core clinical presentations that needs to be addressed to facilitate better occupational and interpersonal functioning.

The finding that first responders reported higher rates of excessive alcohol use is not surprising because of evidence that between 15%-25% of first responders engage in problematic alcohol use (Ballenger et al., 2011; Dietrich & Smith, 1986). People with PTSD have high rates of alcohol abuse, and both cross-sectional and longitudinal analyses support the proposal that PTSD can contribute to alcohol abuse as people self-medicate to reduce distress associated with PTSD symptoms (Nickerson et al., 2014). The finding that alcohol abuse was elevated in first responders seeking treatment can be understood in terms of PTSD exacerbating the common high rates of problematic drinking in first responders. Further, it underscores the need for clinicians treating PTSD in first responders to be aware of the role of problematic alcohol consumption and how it may impact on treatment.

The observation that first responders also had higher levels of suppressed anger accords with the finding of the prominence of numbing symptoms relative to others seeking treatment for PTSD. Emotional inhibition can result in suppression of many emotional reactions, including anger. Suppressed anger can be problematic because it is associated with interpersonal difficulties (Han, Won, Kim, & Lee, 2015), cardiovascular problems (Russell, Smith, & Smyth, 2016), pain (Burns, Quartana, & Bruehl, 2007), and poor conflict management skills (Shao, Wang, Cheng, & Doucet, 2015). This pattern underscores the problematic nature of suppressed anger in first responders and points to the need for clinicians to be aware of and incorporate adaptive anger management in treatment of PTSD in first responder patients.

There are a number of limitations to this study. First, all participants were treatment-seeking and so they are not necessarily representative of all first responders with PTSD. Second, the cross-sectional nature of the sample precludes understanding how these differential symptoms across first responders and civilians with PTSD impact treatment response. Future study could usefully examine how the symptoms that are specifically distinctive of first responders are responsive to TF-CBT. Third, the first responder sample was disproportionately male relative to the civilian sample; although sensitivity analyses that focused on males replicated the major results that more male first responders reported dysphoric and

numbing symptoms than male civilians, there is a need for further study that is more representative of female first responders. Relatedly, there is a need for larger sample sizes that comprise both sexes because it was noted that the reduced statistical power may have resulted in some of the initially observed differences between the groups not being retained when only males were studied. Fourth, it is noted that symptom minimization has been noted in first responders because of the common perception that professionals, including military and first responder personnel, should be able to cope with stressors, and sometimes by concerns that disclosure of symptoms may impact opportunities for promotion or right to carry firearms (French, Rona, Jones, & Wessely, 2004). These factors may have influenced reporting of symptoms in these participants. Fifth, we recognize that other analytic approaches may be used to investigate the symptom profiles of first responders and civilians, including latent class and latent profile analyses, to determine how overall symptom profiles may differ across these patient groups.

This study presents novel findings regarding the symptom profiles of first responders presenting for treatment for PTSD. It highlights that specific attention may be needed in addressing the emotional numbing, alcohol abuse, and suppressed anger of first responders with PTSD because these symptoms tend to be more prevalent relative to other PTSD patients. There is evidence that poorer outcomes following treatment are associated with more severe depression (Stein, Dickstein, Schuster, Litz, & Resick, 2012), alcohol abuse (Lloyd et al., 2014), emotional numbing (Bae, Kim, & Park, 2016), and anger (Lloyd et al., 2014). Considering these symptoms are more prevalent in first responders, it appears important that clinicians pay attention to these factors to optimize the likelihood of treatment success. The dysphoric symptoms can also be attributed to the prolonged work strain of many first responders, which can lead to burnout; this factor has been noted as a risk for psychological problems in first responders (Martinussen et al., 2007; Swatt et al., 2007), and may be particularly relevant for dysphoric symptoms.

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## Data availability statement

The deidentified data of this study are available at figshare <https://doi.org/10.6084/m9.figshare.16864069>.

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