The Effectiveness of Trauma-Focused Psychotherapy for Complex Post-Traumatic Stress Disorder: A Retrospective Study

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21

22   Abstract

23   **Objective:** We retrospectively evaluated the effectiveness of trauma-focused psychotherapy

24   versus stabilisation and waiting in a civilian cohort of patients with an ICD-11 diagnosis of

25   Complex Post-Traumatic Stress Disorder (CPTSD).

26   **Methods:** We identified patients with CPTSD treated at a specialist trauma service over a 3-year

27   period by triangulating evidence from self-report questionnaires, file review, and expert-clinician

28   opinion. Patients completed a phase-based treatment: stabilisation consisting of symptom

29   management and establishing safety, followed by waiting for treatment (phase 1); individual

30   trauma-focused psychotherapy in the form of Trauma-Focused Cognitive Behavioural Therapy

31   (TF-CBT), or Eye Movement Desensitisation and Reprocessing (EMDR) or TF-CBT plus

32   EMDR (phase 2). Our primary outcome was PTSD symptoms during phase 2 vs phase 1.

33   Secondary outcomes included depressive symptoms, functional impairment, and a proxy CPTSD

34   measure. Exploratory analysis compared outcomes between treatments. Adverse outcomes were

35   recorded.

36   **Results:** 59 patients were included. Compared to receiving only phase 1, patients completing

37   trauma-focused psychotherapy showed statistically significant reductions in PTSD [$t(58) = -3.99$,

38    $p < .001$], depressive symptoms [$t(58) = -4.41$, $p < .001$], functional impairment [$t(58) = -2.26$, p

39    $= .028$] and proxy scores for CPTSD [$t(58) = 4.69$, $p < .001$] . There were no significant

40   differences in outcomes between different treatments offered during phase 2. Baseline depressive

41   symptoms were associated with higher PTSD symptoms and functional impairment.

42   **Conclusions:** This study suggests that trauma-focused psychotherapy effectively improves

43   symptoms of CPTSD. However, prospective research with validated measurements is necessary

44   to evaluate current and new treatments and identify personal markers of treatment effectiveness

45   for CPTSD.

46   *Keywords:* Complex Post-Traumatic Stress Disorder, CPTSD, ICD-11, Trauma-Focused

47   CBT, EMDR

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Introduction

50

51   The 11th version of the International Classification of Diseases (ICD-11)[1] introduced

52 Complex Post-Traumatic Stress Disorder (CPTSD). PTSD and CPTSD represent distinct

53 diagnostic entities[1, 2]. CPTSD commonly arises following exposure to prolonged and repetitive

54 interpersonal traumas, where escape is difficult or impossible[3]. These may include sexual, physical

55 and emotional abuse in childhood and adolescence, torture, genocide, prolonged domestic

56 violence, and/or institutional abuse[4-6]. Compared to chronic PTSD, a CPTSD diagnosis requires

57 Disturbances of Self-Organization (DSO), namely emotional dysregulation; a negative self-

58 concept; and impaired interpersonal relationships[1,2] alongside core PTSD symptoms i.e., re-

59 experiencing through flashbacks and intrusive memories, avoidance of trauma-related reminders

60 and heightened threat sensitivity. Early evidence suggests an impairment in the neural circuitry

61 involved in threat processing[7] and response inhibition[8] in individuals with CPTSD, reflecting the

62 additional emotion dysregulation, compared to those with PTSD. Finally, patients with ICD-11

63 CPTSD show higher levels of suffering, comorbidity and functional impairment than with ICD-

64 11 PTSD [9-15] and DSM-5 PTSD[16,17].

65   International guidelines on CPTSD management[18,19] recommend a phase-based

66 psychotherapeutic approach[20,21]. Meta-analyses also support the effectiveness of psychological

67 interventions in patients with symptoms of CPTSD[22-24]. Trauma-Focused Cognitive Behavioural

68 Therapy (TF-CBT), and Eye Movement Desensitization and Reprocessing (EMDR) have the

69 strongest evidence base for core PTSD symptoms[22-,24]. TF-CBT consists of prolonged and/or

70 narrative exposure through imaginal reliving with rescripting and cognitive restructuring[25]. EMDR

71 consists of attending to memories and associations while simultaneously engaging in bilateral

72 physical stimulation, such as eye-movements, taps or tones[26]. Research on CPTSD across all its

73   domains in adults is limited due to the novelty of the formal diagnosis, with only two recent studies

74   identifying prolonged exposure[27,28] and EMDR[28] as effective for adults with CPTSD. Further,

75   there is a lack of studies from real-world clinical settings.

76   **Aims of study**

77   We sought to evaluate the treatment model of a specialist inner-London CPTSD service

78   and its effectiveness in patients with CPTSD. Our first aim was to identify whether the package of

79   trauma-focused psychotherapy offered (TF-CBT, EMDR or a TF-CBT plus EMDR) within the

80   phased model approach was effective at reducing PTSD symptom severity in a real-world setting.

81   Our secondary outcomes were change in depressive symptoms, CPTSD using a proxy measure,

82   and functional impairment. Further exploratory aims of this study were 1) to compare differences

83   between groups receiving TF-CBT, EMDR, and TF-CBT plus EMDR and 2) to identify whether

84   baseline clinical severity of PTSD and depressive symptoms influenced treatment response.

85   **Materials and Methods**

86   **Ethics Statement**

87   This retrospective study, which was part of a service evaluation using archival data, was

88   registered with the Camden and Islington NHS Foundation Trust audit committee.

89   **Treatment Setting and Process**

90   The Traumatic Stress Clinic (TSC) is a local outpatient service within the UK National

91   Health Service. The service assesses and treats adult patients with multiple, severe traumas and

92   PTSD, and other comorbid difficulties. The TSC has specialist expertise in working cross-

93 culturally with refugees, asylum-seekers, torture, developmental trauma survivors, victims of

94 trafficking, and complex presentations. Referral criteria include a primary PTSD or CPTSD

95 diagnosis, and readiness to talk about past traumas in treatment without experiencing high levels

96 of emotional dysregulation. The service is unable to accept patients who cannot tolerate trauma-

97 focused psychotherapy, i.e., with significant difficulties with self-harm, drug and alcohol

98 dependence, or other harmful ways of responding to distress.

99 **Patient Referrals and Treatment**

100 Treatment at the TSC follows a phase-based approoach[18-20]. In phase 1, up to 5 sessions of

101 stabilisation occur individually or in a group, and include PTSD psychoeducation, grounding

102 techniques for flashbacks and nightmares, and exercises to improve anxiety and sense of safety.

103 Clinicians may signpost clients for practical problems e.g., regarding finances and housing.

104 Subsequently, patients are placed on a waitlist for trauma-focused psychotherapy.

105 Phase 2 involves processing traumatic memories to re-appraise associated emotions and

106 meanings and integrate them in adaptive representations of the self, relationships, and world. Three

107 trauma-focused psychotherapy options are offered: TF-CBT, EMDR, and TF-CBT combined with

108 EMDR. Choice of therapy was influenced by clinician availability, expertise, and patient

109 preference. TF-CBT at the TSC also draws on evidence-based treatments for multiple and complex

110 traumas, such as narrative exposure therapy[29] and compassion-focused therapy[30]. Depending on

111 clinical presentation, some patients are invited to attend a compassion-focused therapy group

112 before, during or after individual therapy[30,31]. Unfortunately, we had insufficient information to

113 incorporate this in our analysis. Phase 3, re-integration, builds on the hopes and goals of patients

114 during treatment, encouraging the re-establishment of social and cultural connection. While we

115   did not study this treatment phase, re-integration begins to be considered during phase 2 trauma-

116   focused psychotherapy.

117   **Participants and Procedures**

118   Our sample included all TSC discharges between July 2016 to June 2019, satisfying the

119   'selection' criterion in the assessment of methodological quality of case reports[32]. Eligible

120   patients were all adults, had sustained multiple and prolonged traumata and had completed

121   outcome measures at assessment, start of treatment, and end of treatment. Using a

122   pseudonymised list of yearly discharges, we classified patients as meeting ICD-11 diagnostic

123   criteria for CPTSD retrospectively through standardised psychological measures, file review and

124   consultation with expert treating clinicians, fulfilling criteria for 'ascertainment' in the evaluation

125   of the methodological quality of case reports[32]. Patients had to meet CPTSD criteria across all

126   three steps to be included in the study.

127   Firstly, the presence of symptoms based on items of the Post-traumatic Checklist (PCL)-

128   5[33], Patient Health Questionnaire (PHQ)-9[34] and Work and Social Adjustment Scale (WSAS)[35]

129   corresponding to the ICD-11 diagnosis of CPTSD (See table 1) were evaluated.

130   The second step involved reviewing clinical case notes to confirm that the patient fulfilled

131   all CPTSD domains. Affect dysregulation was endorsed when clinicians described emotional

132   reactivity, dissociation, high levels of anger, aggression and/or emotional numbing[36]. Negative

133   self-concept was operationally defined as persistent negative beliefs about the self, and feelings of

134   guilt and shame related to the event. Interpersonal disturbances included social isolation,

135   avoidance of family, friends, intimate relationships; estrangement; and difficulty with emotional

136   intimacy[36].

137   In the third step we consulted clinicians involved in patients' care to ascertain whether

138   patients fulfilled criteria for CPTSD at assessment. Clinicians were blind to the rating derived from

139   clinical notes and questionnaires, and reported whether each ICD-11 CPTSD symptom was

140   present.

141   **Measurements**

142   Sociodemographic characteristics and The Life Events Checklist (LEC)[37] were collected at

143   baseline. Outcome measurements were collected at assessment, start and end of treatment.

144   **PTSD Symptoms**

145   The PCL-5[33], is a 20-item self-report measurement of PTSD based on the DSM-5[38]. Scores range

146   0-80 and refer to the past month. A 10-point reduction represents clinically significant change,

147   and a cut-off of 33 indicates a PTSD diagnosis[39]. It has been reported to have good psychometric

148   properties[40].

149   **Depressive Symptoms and Functional Impairment**

150   The PHQ-9[34] is a self-report instrument measuring 9 DSM-IV[41] criteria for depression.

151   Scores range 0-27, with higher scores reflecting depression severity. It is well-validated[34] with

152   good sensitivity to change[42]. A 5-point reduction on the PHQ-9[43] reflects clinically significant

153   change and a score of less than 5 reflects loss of diagnosis[44].

154   The WSAS is a 5-item self-report rating scale, measuring perceived impairment in

155   functioning in the domains of work, home management, social leisure activities, private leisure

156   activities and relationships with others. A WSAS score above 20 suggests at least moderately

157   severe impairment from psychopathology[35].

158 Proxy for the ITQ to measure CPTSD

159   We calculated total scores for items used to screen for CPTSD, mapping onto symptom

160   dimensions of CPTSD based on the ICD-11 and the International Trauma Questionnaire (ITQ)[45]

161   (See table 1). PHQ-9 and WSAS item responses were converted to a 5-item scale comparable to

162   the ITQ and PCL-5.

163 Adverse and No Treatment Effects

164   We recorded hospitalisations, suicide attempts, serious self-harm resulting in presentation

165   to hospital, or severe deterioration in functioning and symptomatology due to treatment as

166   documented in clinical notes. Symptom deterioration was measured through reliable change on

167   the PCL-5 and PHQ-9 using the reliable change index (RCI) (see below).

168 Statistical Analysis

169   Linear multilevel mixed-effects models examined treatment effects on outcomes over time.

170   The random component included a random subject intercept term to account for correlations

171   between repeated measurements[46]. Fixed effects included: age, sex, the dummy variable of

172   treatment period (assessment, start of treatment and end of treatment), treatment time, and number

173   of sessions. The fixed effects assessing change in the PTSD scores included baseline depression

174   scores, treatment period and depression interaction. The exploratory models assessing change in

175   depression scores included baseline PTSD scores and their interaction with treatment period, and

176   the model assessing change in functional impairment included baseline PTSD and depression

177   scores. To explore clinical change in the treatment phases, we compared symptom change during

178   stabilisation and waiting vs during individual trauma-focused psychotherapy (i.e., pre-to-post

179   phase 1 symptom change vs. pre-to-post phase 2 symptom change) on primary and secondary

180   outcomes using paired samples *t*-tests. Rates of reliable change[47] were calculated for all outcomes

181   in both treatment phases. For each outcome, the standard error of measurement (SE_{meas}) was

182   calculated using the scale's Cronbach's alpha and the standard deviation of a normative sample.

183   Subsequently, the pre-treatment and post-treatment difference was divided by the standard error

184   of the difference (S_{diff}), with the absolute value reflecting the RCI. A change index score of over

185   1.96 was considered reliable[47]. Independent samples *t*-tests were used to assess for differences

186   between treatment groups, for each outcome of interest across time points. Analyses were

187   conducted using IBM SPSS Statistics 22 and STATA v16.1 MP 4.

188   **Results**

189   Figure 1 presents the screening of patients and reasons for exclusion, with 59 patients

190   included in the study. Socio-demographic and clinical characteristics are presented in Table 2.

191   Patients were between 25 to 63 years [mean (*SD*) = 45.66 (9.19)] and 64% (*n* = 38) were female.

192   Most patients reported psychiatric comorbidity (54.24%, *n* = 32) and received psychotropic

193   medication (69.49%, *n* = 41). Most patients experienced developmental trauma and multiple

194   traumatic events. 84% endorsed directly experiencing at least 3 traumatic events on the LEC, with

195   a mean of 5.09 (*SD* = 3.07) events directly experience. The sample was ethnically diverse, and

196   49.15% (*n* = 29) was of non-UK origin while 35.60% (*n* = 21) were refugees or asylum seekers.

197   Mean Phase 1 duration was 13.6 (8.1) months and trauma-focused psychotherapy duration

198   was 17.60 (12) months. Mean (*SD*) number of phase 2 treatment sessions was 28 (10) (range: 7 -

199   60 sessions). 57.60% (n = 34) received TF-CBT, 13.60% (n = 8) received EMDR and 28.80% (n

200   = 17) received TF-CBT plus EMDR. Outcome measurements by treatment group are presented in

201   Table 4.

PTSD Symptoms

203   Patient outcomes across time are presented in table 3. PCL-5 scores significantly improved

204   following trauma-focused psychotherapy (coefficient -14.44; 95%CI -25.89 to -10.16) (see Table

205   2), with a large effect size (Cohen's d = 0.89). PCL-5 scores did not significantly change during

206   phase 1 (p = 0.162). Change in PCL-5 scores was significantly greater during trauma-focused

207   psychotherapy [mean (SD) =-14.44 (16.21)] versus during phase 1 [mean (SD) = 3.37 (11.35)],

208    $t(58)$ = -3.99, $p < .001$ (Cohen's d = 0.52) (see Figure 2). 28.81% (n=17) demonstrated positive

209   reliable change during phase 1 and 54.24% (n=32) demonstrated positive reliable change during

210   phase 2. 54.24% (n=32) showed clinically significant change on the PCL-5 during phase 2 (see

211   table 2). Visually inspecting changes across domains of the PCL-5 showed a consistent reduction.

212   Baseline depression significantly and positively affected PCL-5 scores (coefficient 0.97;

213   95% CI .41 to 1.54) at the 5% level. There was no treatment period and baseline depression

214   interaction ($p > 0.49$). No differences were observed in PCL-5 scores between patients receiving

215   TF-CBT, EMDR and TF-CBT plus EMDR, at any measurement point (all $p > 0.42$). There was

216   no association between sex, age, number of sessions, time, and PCL-5 scores (all $p > 0.57$).

Depressive Symptoms, Functional Impairment and CPTSD

218   The PHQ-9 presented with good internal reliability (a = 0.81). PHQ-9 scores

219   significantly reduced following trauma-focused psychotherapy (coefficient -5.38; 95%CI -7.50

220 to -3.25) with a large effect size (Cohen's $d = 0.96$). PHQ-9 scores did not significantly change

221 during phase 1 ($p = 0.51$). Change on PHQ-9 scores during trauma-focused psychotherapy [mean

222 (SD) = -5.07 (5.47)] was significantly greater than during phase 1 [mean (SD) =.56 (5.17)], $t(58)$

223 = -4.41, $p < .001$ (Cohen's d =0.57) (see figure 2). 18.64% (n=11) demonstrated positive reliable

224 change during phase 1 and 40.68% (n=24) demonstrated positive reliable change during phase 2.

225 49.15% (n=29) of patients showed clinically significant change on the PHQ-9 during phase 2.

226   Baseline PCL-5 score had a significantly positive effect at the 5% level on PHQ-9 scores

227 (coefficient .14; 95%CI .02 to .25). The effect of baseline PTSD scores was consistent across

228 measurement points, presenting no interaction with treatment period (all $p > .337$). Sex, age,

229 number of sessions, or time were not associated with PHQ-9 scores (all $p > 0.433$). PHQ-9 scores

230 did not differ between patients receiving TF-CBT, EMDR or TF-CBT plus EMDR, at any

231 measurement point (all $p > .105$).

232   The WSAS showed good internal reliability ($a =$ of 0.80). WSAS scores significantly

233 decreased following trauma-focused psychotherapy (coefficient -5.11; 95% CI -8.52 to -1.71) with

234 a moderate effect size (Cohen's $d = 0.54$). WSAS scores did not significantly change during phase

235 1 ($p = 0.580$). Change in WSAS scores was significantly greater following treatment [mean (SD)

236 =-5.21 (9.49)] than following phase 1[mean (SD) =.33 (5.63)], $t(58)$= -2.26, $p = .028$, (Cohen's d

237 =.424) (see figure 2). 7.01% (n=4) demonstrated positive reliable change during phase 1 and

238 34.48% (n=20) demonstrated positive reliable change during phase 2. PHQ-9 (coefficient 0.51;

239 95% CI .06 to .97)., but not PTSD ($p = 0.195$)._ scores had a significant effect on WSAS scores.

240   Sex, age, number of sessions, or time were not associated with WSAS scores (all $p > .170$).

241 WSAS scores did not differ between patients receiving TF-CBT, EMDR plus TF-CBT plus

242   EMDR, at any time point (all $p > .185$). 59.3% ($n = 35$) continued to experience at least moderately

243   severe impairment from psychopathology at the end of treatment.

244   There was no significant reduction in CPTSD severity during phase 1, $p = .168$. There

245   was a significant reduction in CPTSD symptom severity from start of treatment [mean (SD) =

246   34.49 (7.26)] to end of treatment [mean (SD) = 25.47 (10.98)], $t(58) = 7.18$, $p < .001$, (Cohen's d

247   =1.04). Change in CPTSD severity was significantly greater following treatment [mean (SD) = -

248   9.05 (9.60)] than during phase 1 [mean (SD) =1.36 (7.46)], $t(58) = 4.69$, $p < .001$.

249   **Adverse Treatment Effects**

250   Regarding adverse effects, no hospitalisations, increased suicidality, or self-harm were

251   reported to have occurred during treatment. Reliable worsening on the PCL-5 was observed in

252   11.86% ($n = 7$) of patients during phase 1 and 3.39% ($n = 2$) during phase 2. Reliable worsening

253   on the PHQ-9 was observed in 8.48% ($n = 5$) of patients during phase 1 and 1.70 % ($n = 1$)

254   during phase 2. Reliable worsening on the WSAS was observed in 6.78% ($n = 4$) of patients

255   during phase 1 and 3.39% ($n = 2$) during phase 2.

256   **Discussion**

257   This is one of the first studies on the effectiveness of trauma-focused psychotherapy in

258   improving PTSD symptoms in patients with CPTSD based on the ICD-11 criteria in a real-world

259   setting. Depression, functional impairment and CPTSD also improved significantly after

260   treatment. Interestingly, higher depression scores were predictive of higher PTSD and impaired

261   functioning across time points, and a smaller association was established with baseline PTSD and

262   depression scores across time points.

PTSD, Depressive and CPTSD symptoms

Positive reliable and clinically significant change during trauma-focused psychotherapy were observed in more than half the sample. Comparing this to phase 1, where a third of patients reliably improved on PTSD symptoms, we see that in most patients PTSD symptoms do not tend to spontaneously improve over time in the absence of active trauma-focused psychotherapy. As we compared treatment with stabilisation plus waiting, we cannot infer whether stabilisation alone is effective. In two recent studies[27,48] patients with CPTSD did not benefit more from the addition of affective and interpersonal skills training to prolonged exposure[27] and EMDR[48]. However, earlier research[49] had found additional skills training to improve outcomes for women with more severe difficulties in emotion regulation. It is therefore necessary for future research to elucidate the relative benefit of using a phase-based approach[22]. Additionally, as the PCL-5 is based on the DSM-5 diagnosis of PTSD[33], improvements in the DSM-5 domain "Negative alterations in cognition and mood"[38] may reflect changes in DSO.

Depression scores decreased significantly more during trauma-focused psychotherapy than during phase 1, in line with previous meta-analyses[23]. Approximately half of patients exhibited clinically significant change and 40.68% exhibited reliable improvement following trauma-focused psychotherapy. TF-CBT uses cognitive restructuring to change negative thinking patterns about the self and the world, such as negative thinking biases and dysfunctional core beliefs[25] also relevant in depressive symptoms, which have developed because of severe, repeated and often chronic traumatic experiences.

The role of baseline depression on the trajectory of PTSD and functioning scores is noteworthy, as patients with CPTSD are known to experience higher levels of depression scores[16]

285 and comorbid depression can negatively affect CPTSD treatment outcome[50,51]. Putative

286 explanations involve the way negative schemata and shame can interfere with the re-processing of

287 trauma memories[52], but also how reduced motivation and hopelessness could make elements of

288 treatment difficult to engage with. Depressive symptoms can be targeted through a multimodal

289 approach[53], and in stabilisation, especially if they significantly increase risk of harm to self [19].

290 The statistically significant improvement in our proxy CPTSD score during trauma-

291 focused psychotherapy needs to be interpreted with caution, given the retrospective and non-

292 validated measurement. Treatment groups did not differ on symptoms across time points,

293 consistent with meta-analyses comparing the effectiveness of TF-CBT to EMDR on both PTSD

294 and depression scores[22,23]. No sociodemographic characteristics were associated with clinical

295 outcomes across time points. Although females have higher risk of CPTSD in population studies[54]

296 the multiple and diverse range of traumas, and comorbidities observed in our sample may explain

297 the consistent symptom severity.

Adverse Effects

299 Most past studies fail to describe adverse effects[24], despite the risk of increased PTSD

300 symptoms, particularly re-experiencing, following trauma-focused psychotherapy[55,56]. No adverse

301 effects were reported by clinicians, but a small number of patients experienced reliable worsening

302 on PTSD, depression, or functional impairment during treatment. The exclusion of patients

303 dropping out of treatment could introduce selection bias to this finding.

Strengths and Limitations

305 Our study is novel in evaluating treatment in a sample meeting ICD-11 CPTSD diagnostic

306 criteria in a real-world clinical setting with an ethnically and culturally diverse civilian sample.

307   Our research on treatment following multiple traumas highlights the greater level of need

308   compared to studies on single event traumas, providing a valuable addition to the current trauma

309   literature. Finally, in contrast to previous research[23,24], we considered adverse effects.

310   Limitations include a retrospective design and the absence of a separate control group.

311   Adding to this the length of waiting time and treatment we need to consider the possibility of

312   spontaneous remission. Varying levels of detail in clinical notes may have limited the retrospective

313   ability to capture the clinical nature of a symptom e.g., depressive symptoms vs the negative self-

314   concept and world view as part of DSO. However, our stringent process of participant selection

315   by triangulating evidence from different sources would have provided some protection against this,

316   increasing the internal validity of our measurement. Treatment comparison results could be

317   explained by unadjusted confounding variables, as there was no randomisation, and the sample

318   size was small. The non-random provision of treatment modality may have been influenced by

319   clinician availability, expertise, and preference. Another limitation is that we only included

320   treatment completers with all outcome measures and without follow-up.

321   **Clinical Implications**

322   A clear clinical implication from our study concerns treatment length. More than half of

323   patients still met clinical diagnosis criteria after an average of 28 sessions, which is almost three

324   times the number suggested by NICE clinical guidelines for PTSD[19]. This finding demonstrates

325   that it is critical for CPTSD guidelines to be developed. Clinically this population may present

326   with shame and lack of trust arising from interpersonal traumas and require longer periods of

327   time for engagement and the formation of a *good enough* therapeutic relationship[19]. A recent

328   study[27] supported that longer treatment is necessitated, as some patients with CPTSD continue to

329   present with elevated symptoms after therapy. We need to adapt treatments and available

330   resources to fit these higher levels of complexity and severity[57].

331   Finally, although we did not record current life events that could interfere with treatment,

332   more functional impairment is observed in CPTSD than in PTSD[3,11,13,15,27,58]. This includes

333   socioeconomic, relational, and housing difficulties. Consistent with meta-analyses[58] our sample

334   maintained high levels of functional impairment following treatment. It is therefore essential to

335   move beyond the narrow measurement of symptomatic change, to promoting wellbeing in all life

336   domains affected by the debilitating experience of CPTSD .

337   **Suggestions for Future Research**

338   Further research should determine the comparative efficacy and optimal sequence of

339   different treatments with randomized controlled trials, and designs to identify personal markers

340   of treatment effectiveness for CPTSD. Psychotherapeutic approaches that can improve one's

341   attachment organisation and adaptive self and interpersonal schemata should be explored[59], and

342   for who trauma-focused psychotherapy is most appropriate and safe.

343   **Acknowledgements**

344

345   **Conflicts of Interest**

346

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351　**Author Contribution**

352　EM, MB, and JB participated in formulating research questions, designing the research, carrying

353　it out and writing the article. EM and RG participated in analysing the research. JB, ED, KE, JG,

354　HK, TK, LO, EW, RG, CB, JB, MB participated in carrying out the research and writing the

355　article.

356　**Data Availability**

357　The data that support the findings of this study are available from the corresponding author MB

358　upon reasonable request.

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531   Table 1

532   *Items used to assess for ICD-11 Complex PTSD. A score of >2 was required for a symptom to be*

533   *considered endorsed for the PCL-5 and PHQ-9, and a score of >4 for the WSAS.*

ICD-11 Symptoms	PCL-5, PHQ-9 and WSAS items capturing CPTSD symptom clusters
Re-experiencing	PCL-2 Repeated, disturbing dreams of the stressful experience? PCL-3 Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?
Avoidance	PCL-6 'Avoiding memories, thoughts, or feelings related to the stressful experience? ' PCL-7 'Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?'
Hyperarousal	PCL-17 'Being "superalert" or watchful or on guard? ' PCL-18 'Feeling jumpy or easily startled?'
Affect dysregulation	PCL-14 'Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?' PCL-15 'Irritable behaviour, angry outbursts, or acting aggressively?'
Negative self-perception	PCL-10 'Blaming yourself or someone else for the stressful experience or what happened after it?'

Interpersonal problems	PHQ-6 'Feeling bad about yourself or that you are a failure or have let yourself or your family down' PCL-13 'Distant and cut-off from people' WSAS-5 'Because of my [problem], my ability to form and maintain close relationships with others, including those I live with, is impaired.'

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537 Table 2

538 *Sociodemographic and Clinical Patient Characteristics.*

Age (years)	Mean *(SD)*		
	45.66 (9.19)		
	n (%)		n (%)
Sex			
Male	21 (35.60)	Female	38 (64.40)
Ethnicity ‡			
White-British	28 (47.46)	Black-Caribbean	2 (3.39)
White-Other	7 (11.86)	Black-African	9 (15.25)
White-Irish	1 (1.70)	Other Ethnic Background	11 (18.64)
Asian-British	1 (1.70)		
Geographical Region of Origin			
Northwestern Europe	31 (52.54)	North Africa	2 (3.39)
Southern Europe	1 (1.70)	Sub-Saharan Africa	7 (11.86)
Eastern European	6 (10.17)	Middle East	11 (18.64)
Asian	1 (1.70)		
Psychiatric Comorbidity			
Depression	24 (40.68)	Emotionally Unstable Personality Disorder	2 (3.39)
Psychosis	3 (5.09)	Anxiety Disorder	3 (5.09)
Type of index trauma			
Developmental Trauma	37 (62.71)	Domestic Violence	14 (23.73)
Childhood Emotional Abuse	21 (35.59)	Traumatic Bereavement	11 (18.64)
Childhood Physical Abuse	23 (38.98)	Torture	11 (18.64)
Childhood Sexual Abuse	25 (42.37)	Trafficking	3 (5.09)
Childhood Neglect	7 (11.86)	Female Genital Mutilation	2 (3.39)
Childhood Bullying	1 (1.70)		
Frequency of traumatic events (Life Events Checklist)	*n* (%)		
Natural Disaster	7 (11.86)	Unwanted sexual experience	23 (39.00)
Fire/Explosion	4 (6.78)	War trauma/ combat	13 (22.03)
Transportation Accident	15 (25.42)	Captivity	18 (30.51)
Serious Accident	10 (16.95)	Life Threatening Illness/ Injury	12 (20.34)
Exposure to Toxic Substance	8 (13.56)	Severe Human Suffering	14 (23.73)
Physical Assault	34 (57.63)	Sudden Violent Death	4 (6.78)
Assault with a weapon	18 (30.51)	Sudden Accidental Death	17 (28.81)

Sexual Assault	27 (45.76)	Serious injury/harm to others	2 (3.39)
Other stressful event or experience	19 (32.20)		

Number of Medicines			
1	29 (49.15)	3	0
2	11 (18.64)	4	1 (1.70)

Psychopharmacological Class (Neuroscience-based Nomenclature)			
Serotonin reuptake inhibitor	21 (35.59)	Serotonin, norepinephrine-multimodal action	5 (8.47)
Serotonin, norepinephrine – reuptake inhibitor	3 (5.09)	Norepinephrine, Serotonin-Receptor Antagonist (NE alpha – 2, 5-HT2, 5-HT3)	13 (22.03)
Dopamine, Serotonin-Receptor Antagonist (D2, 5-HT2)	1 (1.70)	Glutamate – Alpha-2 delta calcium channel blocker	3 (5.09)
Dopamine, Serotonin-Receptor Antagonist (D2,5HT2) and reuptake inhibitor (NET) metabolite	3 (5.09)	GABA – Benzodiazepine receptor agonist (non-selective GABA-A receptor positive allosteric modulator)	1 (1.70)
GABA-PAM	4 (6.78)		

539 †Sex, geographical region of origin, psychiatric comorbidity, types of trauma and information on medication were
540 recorded qualitatively based on each patient's clinical case notes.
541 ‡Ethnicity categories were determined using the ethnic groups recommended for England and Wales, as described
542 by the Office of National Statistics.

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547 Table 3

548 *Means and Standard Deviations Across Measurement Points, and Frequencies of Clinical Status*

549 *at End of Trauma-Focused Psychotherapy (TF-P).*

Measure	Assessment mean (*SD)*	Start of TF-P mean (*SD)*	End of TF-P mean (*SD)*	Clinically significant improvement at the end of TF-P *n* (%)	No longer meeting caseness at the end of TF-P *n* (%)
PCL-5	59. 73 (11.37)	56.36 (13.23)	41.92 (17.44)	32 (54.24)	20 (33.90)
PHQ-9	19.81 (4.64)	19.25 (4.35)	14.39 (6.18)	29 (49.15)	4 (6.80)
WSAS	28.00 (7.63)	27.49 (6.78)	22.28 (10.28)		

550

551   Table 4

552   *Means, standard deviations, median and maximum scores across TF-CBT, EMDR and TF-CBT plus EMDR treatment groups.*

Measure	TF-CBT	EMDR	TF-CBT plus EMDR
PCL-5 assessment [mean*(SD)*]	61.21 (11.56)	58.88 (11.14)	57.18 (11.25)
md (min-max)	62.00 (37.00-79.00)	55.50 (44.00-75.00)	59.00 (40.00-78.00)
PCL-5 start of TF-P [mean*(SD)*]	57.35 (12.19)	51.88 (18.07)	56.47 (13.16)
md (min-max)	59.00 (16.00-75.00)	50.50 (18.00-75.00)	54.00 (31.00-75.00)
PCL-5 end of TF-P [mean(*SD*)]	42.12 (16.06)	41.38 (22.98)	41.77 (18.42)
md (min-max)	47.00 (6.00-66.00)	42.50 (13.00-76.00)	37.00 (10.00-74.00)
PHQ-9 assessment [mean*(SD)*]	20.47 (4.15)	16.63 (6.63)	20.00 (4.14)
md (min-max)	21.00 (11.00-27.00)	14.00 (10.00-26.00)	21.00 (11.00-27.00)
PHQ-9 start of TF-P [mean*(SD)*]	19.06 (4.05)	17.88 (5.87)	20.29 (4.17)
md (min-max)	19.00 (11.00-27.00)	18.00 (10.00-26.00)	20.00 (13.00-27.00)
PHQ-9 end of TF- [mean*(SD)*]	14.16 (5.23)	13.25 (7.89)	15.35 (7.19)
md (min-max)	14.00 (02.00-25.00)	12.50 (2.00-27.00)	17.00 (4.00-27.00)

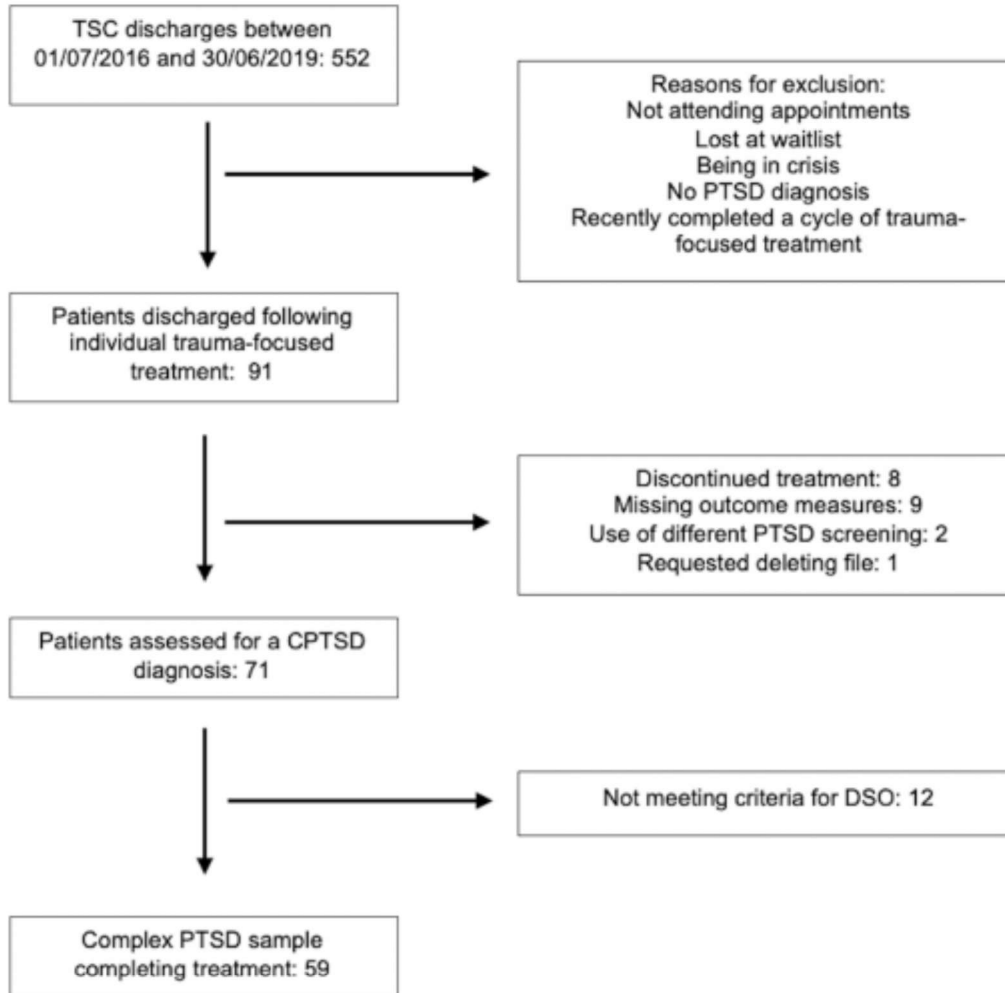|				
WSAS assessment [mean*(SD)*)]	29.52 (6.99)	27.38 (5.81)	25.35 (9.10)	553
md (min-max)	30.00 (17.00-40.00)	25.50 (21.00-36.00)	23.00 (9.00-40.00)	
WSAS start of TF-P [mean*(SD)*)]	28.50 (5.62)	27.50 (6.74)	25.59 (8.60)	554
md (min-max)	30.00 (18.00-37.00)	25.50 (21.00-40.00)	24.00 (7.00-38.00)	
WSAS end of TF-P [mean*(SD)*)]	23.19 (8.36)	19.38 (11.38)	21.94 (13.10)	555
md (min-max)	24.00 (4.00-36.00)	19.00 (2.00-36.00)	16.00 (2.00-40.00)	

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Figure 1. Flow Diagram of Participant Classification with a Complex Post-Traumatic Stress Disorder (CPTSD) diagnosis (DSO, disturbances of self-organization).
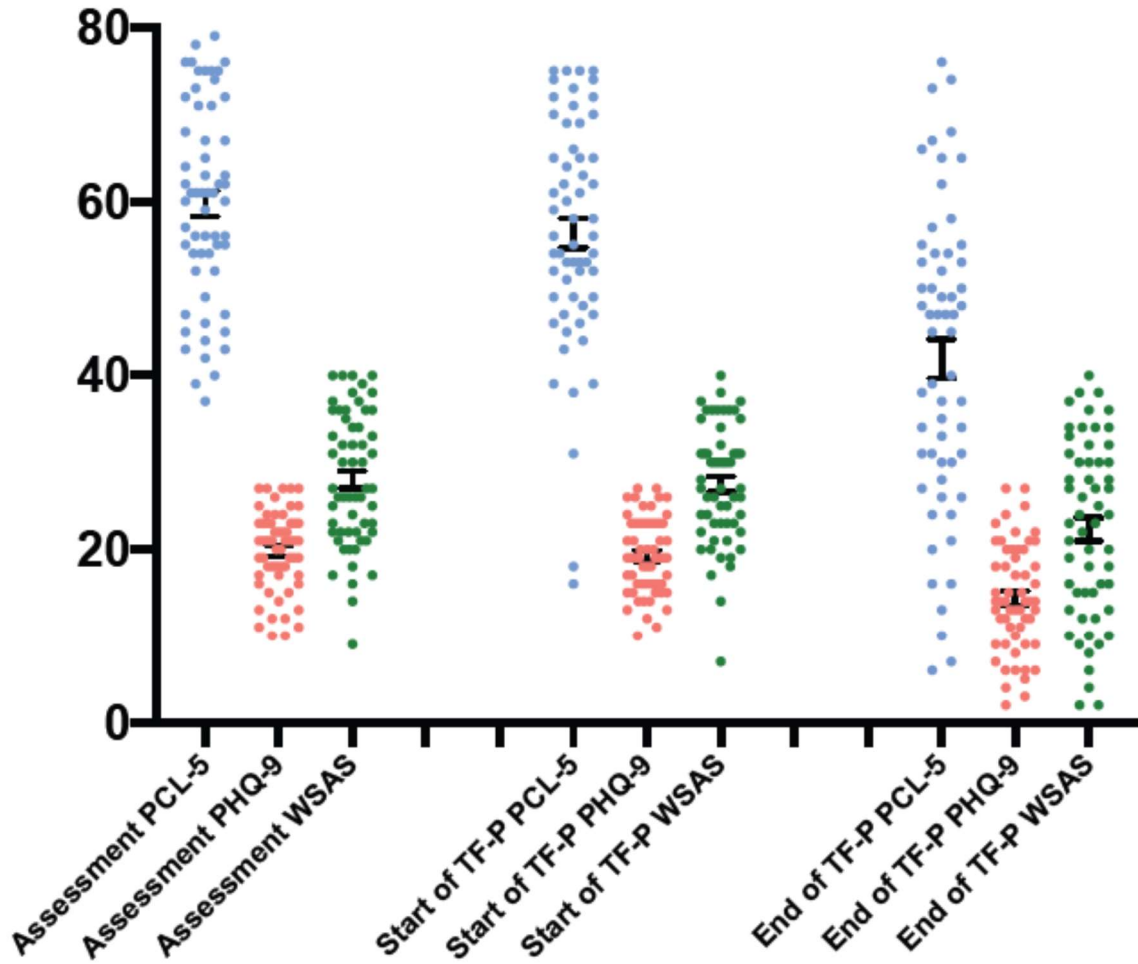
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Figure 2.

Individual post-traumatic stress disorder (PTSD Checklist; PCL-5) and depressive (Patient Health Questionnaire; PHQ-9) symptom severity and psychosocial functioning (Work and Social Adjustment Scale; WSAS) scores across measurement points. Error bars indicate standard error of measurement. TFP; trauma-focused psychotherapy.

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