



**Outpatient cognitive behavioural therapy for 'functional' and 'organic' neuropsychiatric disorders: a retrospective case control comparison**

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8 **Title:** Outpatient cognitive behavioural therapy for ‘functional’ and ‘organic’ neuropsychiatric  
9 disorders: a retrospective case control comparison

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42 **Key words:** Functional neurological disorder, cognitive behavioural therapy, case control study

43 **Abstract**

44 **Background** There is no gold standard treatment of motor functional neurological disorder (mFND)  
45 and limited evidence exists on the effectiveness of cognitive behavioural therapy (CBT) in treating the  
46 disorder. CBT is effective in the treatment of other somatoform disorders.

47 **Aim** To evaluate demographic and clinical characteristics, treatment outcomes, and treatment  
48 dropout of mFND patients who received CBT in a neuropsychiatric outpatient clinic.

49 **Methods** We used a large anonymised psychiatric register to assess all patients receiving outpatient  
50 CBT in a neuropsychiatry clinic between 2006 and 2016. We assessed socio-demographic variables,  
51 physical symptom improvement and changes in clinical outcome and mood scores. We compared  
52 outcomes to a control group of patients with organic diseases treated with CBT in the same clinic.

53 **Results** We identified 98 patients with mFND and 76 controls with organic neuropsychiatric disease  
54 (ONP). mFND patients were more likely to have experienced childhood sexual abuse (23.8% v 8.2%,  
55  $\chi^2$ : 7.3,  $p = 0.01$ ). A logistic regression analysis found no socio-demographic differences between mFND  
56 patients who dropped out early versus treatment completers. Both mFND and ONP patients showed  
57 significant improvements in overall CORE-OM, HONOS-ABI and PHQ-9 scores. A logistic regression  
58 analysis in the mFND group found that an acceptance of psychological explanations prior to treatment  
59 significantly predicted symptom improvement.

60 **Conclusions** mFND patients treated in a specialist CBT clinic show similar improvements in physical  
61 and psychological functioning to ONP patients. A future RCT would help establish the specific elements  
62 of therapy that are effective and which patients respond best to this treatment.

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## 66 **Introduction**

67 Functional neurological disorder with motor symptoms (mFND) refers to a spectrum of neurological  
68 symptoms which are not explained by standard neurological disease {1}. The disorder comprises a  
69 wide range of symptoms including weakness, numbness, tremor through to gait disorders and  
70 paralysis.

71 There is no gold standard treatment and the development of manualised treatments has been  
72 hindered by a lack of consensus on the definitions, classification and diagnosis of the disorder.  
73 Randomised controlled trials (RCTs) of physiotherapy within a biopsychosocial framework for mFND  
74 show promising results {2-5} and there is evidence from smaller studies and case series that a multi-  
75 disciplinary rehabilitative approach is effective {6-9}.

76 Cognitive behavioural therapy (CBT) is one element of the multi-disciplinary approach and emphasises  
77 the importance of cognition and behaviour in maintaining the disorder. Maladaptive cognitions, such  
78 as dysfunctional automatic thoughts, somatic misinterpretations and illness beliefs are challenged in  
79 a bid to modify behaviour {10}. Techniques like muscle relaxation, psychoeducation, grounding  
80 techniques, problem-solving exercises and behavioural experiments may be employed to help disrupt  
81 maladaptive patterns of symptom formation and maintenance.

82 Evidence on the effectiveness of CBT in treating mFND is limited. A case study reported benefits up to  
83 a year for a patient with a functional dystonia after 12 CBT sessions {11}. A small pilot study reported  
84 improvements after CBT and adjunctive physical therapy compared to standard medical care {12}. In  
85 trials of CBT in other forms of FND, a number of studies show improvements in patients with non-  
86 epileptic seizures {13-15} and there is good evidence of its effectiveness in other somatoform  
87 disorders {16-23}, although one RCT comparing CBT to GP care found no significant difference {24}.

88 This evidence lends support to an a priori assumption that CBT will improve mFND symptoms although  
89 such treatment may pose challenges in practice as patients may be resistant to psychological accounts

90 of symptoms, which could affect its uptake and effectiveness. No previous RCTs have however tested  
91 the effectiveness of CBT for mFND.

92 The aim of this study was to evaluate the outcomes of mFND patients who received a course of CBT  
93 at an outpatient neuropsychiatry clinic in South London and Maudsley (SLaM) NHS Foundation Trust.  
94 Since this is an observational study based on clinical practice within a single mental health NHS trust  
95 – albeit one which offers specialist services in neuropsychiatry - we included a comparison group. We  
96 did this to control for the potential non-specific effects of treatment and general improvements in any  
97 group of patients with mental health problems over time. Our control group comprised patients  
98 treated with CBT by the same clinical team for the neuropsychiatric and behavioural manifestations  
99 of organic conditions. We compare socio-demographic characteristics, treatment dropout and clinical  
100 outcomes. We hoped to establish evidence that might help inform a future RCT for CBT for mFND.

## 101 **Method**

### 102 ***Design and source of clinical data***

103 This was a retrospective case-control comparison of mFND and ONP patients treated in a  
104 neuropsychiatry outpatient clinic in SLaM between 1<sup>st</sup> January 2006 and 31<sup>st</sup> December 2016. Data  
105 were obtained from the SLaM Biomedical Research Centre's (BRC) 'Clinical Records Interactive Search'  
106 (CRIS) database. CRIS holds records on over 250,000 anonymised individuals referred to SLaM services  
107 {25}. This is a single online system where all patient information, medication, diagnoses,  
108 correspondence, and clinical outcome scores are recorded. Records can be retrieved using search  
109 terms of the database's structured fields such as age, gender and diagnosis or searches of free text  
110 clinical notes and correspondence.

111 ***Study setting and participants***

112 The outpatient neuropsychiatry services at SLaM assess and treat psychological complications  
113 associated with neurological disorders and functional and dissociative disorders. Patients receiving a  
114 CBT referral are offered a comprehensive assessment after which they may be recommended a formal  
115 CBT course. A common treatment course is 12-15 sessions, usually occurring weekly.

116 Cases included all patients aged over-18 with a primary or secondary diagnosis of 'Conversion disorder  
117 with motor symptom or deficit' (ICD-10 code: F44.4) or those without a formal F44.4 diagnosis but  
118 whose notes indicated they received treatment for functional motor or movement symptoms.

119 Control group patients were included if they were over-18, were being treated in the same CBT clinic  
120 for psychiatric and behavioural manifestations of an organic disease and had no evidence of functional  
121 symptoms. Controls were excluded if they received treatment for non-epileptic seizures only.

122 Patients in either group were excluded from the study if they had had a CBT assessment but their  
123 treatment had not begun but were included if CBT had begun but the course was not yet complete.

124 ***Ethical approval***

125 The CRIS database received ethical approval from the Oxfordshire Research Ethics Committee  
126 (08/H0606/71+5) as an anonymised dataset for mental health research. Ethical approval as an  
127 anonymised database for secondary analysis was granted in 2008, and renewed for a further five years  
128 in 2013. This project was approved by a patient-led oversight committee on 12<sup>th</sup> May 2016.

129 ***Outcome measures***

130 We extracted information on year of birth, gender, ethnicity, marital status, employment, housing  
131 status, receipt of benefits, use of walking aids, having a carer or being a carer, physical comorbidity,  
132 lifetime experience of sexual or physical abuse, age at symptom onset and CBT assessment, and  
133 acceptance of psychological formulations before and after CBT.

134 CBT attendance was calculated as the number of sessions attended out of the total number of sessions  
135 offered. If there was a discrepancy between figures, the reason was recorded. Information on  
136 treatment dropout was recorded.

137 We created a three-point scale to measure patient improvement classified as symptoms 'improved',  
138 'remained the same', or 'got worse'. ONP patients' improvements were based on the goal set by the  
139 patient and therapist at the start of therapy.

140 We collected Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM), Health of the  
141 Nation-Acquired Brain Injury (HoNOS-ABI) and Patient Health Questionnaire (PHQ-9) scores. Pre-CBT  
142 scores were classified as occurring nearest patients' CBT assessment date and post-CBT scores were  
143 those taken nearest to the final CBT treatment session or follow-up session. Scores were included if  
144 they were measured within 180 days before or after the date in question.

#### 145 ***Statistical analysis***

146 We used means, standard deviations (SDs), and frequency data to assess differences between mFND  
147 and ONP groups. Chi-square analyses were used for frequency data and Mann-Whitney *U* calculations  
148 for non-normally distributed score comparisons. Proportions were used to describe categorical data.  
149 An exact McNemar's test was used to determine the change in proportion of mFND patients accepting  
150 psychological formulations before and after CBT. A repeated-measures ANOVA was conducted to  
151 assess the change in CORE-OM scores and their associations with socio-demographic variables. We  
152 conducted a binary logistic regression analysis to assess the socio-demographic variables associated  
153 with symptom improvement in mFND patients. SPSS for Windows (SPSS v21.0, Chicago, Illinois, USA),  
154 Microsoft Excel (Microsoft Office Professional Plus 2010, Version 14.0.7015.1000) and GraphPad Prism  
155 (Version 5.01, GraphPad Software, La Jolla California USA) were employed in the analysis.



## 156 Results

### 157 *Patient characteristics*

158 Our search returned 941 patients, of whom 573 were functional patients with no evidence of motor  
159 symptoms and a further 21 who did not meet other study criteria (e.g. aged under-18). A further 102  
160 mFND patients and 71 ONP patients were excluded as they had not yet commenced treatment. The  
161 most common reasons for non-commencement of treatment in mFND patients was due to acceptance  
162 of a referral to the Trust's inpatient neuropsychiatry ward (36.3%, versus 19.7% in the ONP group,  $\chi^2$   
163 = 5.5, 95% CI: 2.1 – 30,  $p < 0.05$ ), non-attendance at assessment or treatment appointments (19% of  
164 mFND versus 26.8% of ONP patients,  $\chi^2 = 1.6$ , 95% CI: -4.2 - 21,  $p > 0.05$ ), and refusal to commence  
165 treatment (13.7% of mFND versus 2.8% of ONP patients,  $\chi^2 = 5.9$ , 95% CI: 2.2 – 19.2,  $p < 0.02$ ).

166 98 mFND and 76 ONP patients began CBT and form our study's sample. Amongst ONPs, epilepsy was  
167 the most common disease (46.1%), followed by Tourette's syndrome (16.9%), sleep disorders (6.7%),  
168 multiple sclerosis (5.6%) and other neurological diseases (20.2%). We assessed lifetime prevalence of  
169 fatigue, anxiety and depression (including low mood, suicidal thoughts and ideation) in ONP patients.  
170 Fatigue affected 55.4%, depression affected 88.2%, and a history of anxiety was recorded in 91.8% of  
171 patients.

172 mFND patients were more likely to be female (72.4% v. 44.7%,  $\chi^2$ : 13.6, 95% CI: 12.2 – 41.9,  $p = 0.001$ ),  
173 unemployed (52.6% versus 35.5%,  $\chi^2$ : 5, 95% CI: 2.2 – 30.8,  $p = 0.03$ ), to have a carer (27.6% versus  
174 14.3%,  $\chi^2$ : 4.4, 95% CI: 0.9 – 24.7,  $p = 0.04$ ) and to have experienced childhood sexual abuse compared  
175 to ONP patients (23.8% versus 8.2%,  $\chi^2$ : 7.3, 95% CI: 4.5 – 25.9,  $p = 0.007$ ).

176 At analysis, the average age of mFND patients was 44.5 years (SD: 12) and the mean age of  
177 psychological symptom onset was 30 years (SD: 14). mFND patients received their CBT assessment on  
178 average at 40.3 years of age (SD: 13) (see Table 1).

179 The most common mFND symptom was weakness (26.9%), most frequently in the leg or entire body.  
180 After weakness, pain was frequently reported (26.3%), followed by tremor, shakes, jerking or dystonia  
181 (24.6%). The area of the body most frequently affected by motor symptoms was the leg (15.4%),  
182 followed by unilateral and bilateral bodily regions (14.3% respectively), arms (11.4%) and back and  
183 chest regions (11.4%). All patients had at least one motor symptom, with 83.7% of patients  
184 experiencing two motor symptoms, 41% with three and 12.2% reporting four.

### 185 ***Openness to a psychological formulation***

186 Prior to therapy commencement, 49% of mFND patients accepted a psychological formulation of their  
187 symptoms, 27.6% did not, and 13.3% were unsure. In ten cases, no information was available or a  
188 psychological account was not applicable.

189 After therapy, 71.6% accepted a psychological account, 17.9% did not, and 5.3% were unsure. There  
190 was a significant increase in the proportion of patients accepting a psychological account after CBT  
191 (McNemar's test,  $p = 0.004$ ).

### 192 ***Treatment attendance***

193 56.1% of mFND and 56.6% of ONP patients attended all CBT sessions offered, 28.6% of mFND and  
194 26.3% of ONP patients dropped out early, 6.1% of mFND and 2.6% of control patients' therapists  
195 decided to stop treatment early, while 9.2% mFND and 14.5% of control patients were still receiving  
196 therapy at the time of data collection.

197 We compared the socio-demographic characteristics of mFND patients who dropped out of therapy  
198 early to those who attended all offered sessions. There were no statistical differences in age, gender,  
199 marital status, ethnicity, employment, abuse experience, acceptance of psychological explanations,  
200 wheelchair usage or treatment outcome scores.

201 **Outcomes**

202 In total, 49.4% mFND patients and 58% ONP patient showed symptomatic improvement, a non-  
203 significant difference. 37.8% of mFND and 20.4% of ONP patients' symptoms remained the same after  
204 CBT, while 8.2% of mFND and 11.8% of ONP patients' symptoms worsened.

205 We compared the difference in socio-demographics between mFND patients whose symptoms  
206 improved to mFND patients whose symptoms stayed the same or got worse. In the unadjusted  
207 analysis, patients who were employed (OR: 2.5, 95% CI: 1 – 6.2,  $p = 0.05$ ), who currently or had  
208 previously worked as health and social care workers (OR: 3.1, 95% CI: 1.1 – 9,  $p < 0.05$ ), and patients  
209 who accepted a psychological formulation before therapy (OR: 4.6, 95% CI: 1.5 – 13.9,  $p < 0.05$ ) were  
210 more likely to improve. Those in receipt of benefits (OR: 0.2, 95% CI: 0.09 – 0.6,  $p < 0.05$ ), and patients  
211 using a wheelchair or walking aid (OR: 0.3, 95% CI: 0.14 – 0.8,  $p < 0.05$ ) were more likely to get worse  
212 or stay the same. There were no differences in age at CBT assessment or age of psychological symptom  
213 onset between those who improved and the rest. Table 2 outlines these results.

214 Using a logistic regression model to adjust for potentially confounding variables, the only significant  
215 predictor of improvement was acceptance of a psychological formulation before therapy (OR: 36.7,  
216 95% CI: 2.1 – 627,  $p < 0.02$ ). The model explained 63% (Nagelkerke  $R^2$ ) of the variance in symptom  
217 improvement and correctly classified 50% of cases (see Table 2).

218 24 mFND patients had pre- and post-therapy CORE-OM scores. mFND patients' mean global CORE-  
219 OM score dropped from a mean of 15.5 (SD: 6.2) (clinically moderate) at baseline to a clinically low  
220 mean of 10 (SD: 6.6) ( $t = 3.9$ ,  $df = 23$ , 95% CI: 2.6 – 8.3, two-tailed  $p = 0.001$ ). ONP patients' scores also  
221 dropped significantly from a mean of 16.3 (SD: 6.8) (moderate) to 12.8 (SD: 6.6) (clinically mild) ( $t =$   
222 2.9,  $df = 23$ , 95% CI: 1.06 – 5.9, two-tailed  $p = 0.007$ ).

223 We conducted a repeated-measures (pre-CBT versus post-CBT) ANOVA, with patient group (mFND  
224 versus ONP) as a fixed factor. The Bonferroni-corrected interaction between the mFND and ONP

225 groups and the change over time (pre- versus post-CBT) was not statistically significant ( $F_{1,46} = 1.13$ ,  $p$   
226  $= 0.30$ , partial  $\eta^2 = 0.02$ ).

227 HoNOS-ABI scores were available for 22 mFND and 15 ONP patients. HoNOS-ABI scores range from 0  
228 to 48 (most severe). Following CBT, the mFND mean HoNOS-ABI score dropped from 11.5 (SD: 6) to  
229 7.3 (SD: 5), a significant change ( $Z = -3.1$ ,  $p = 0.002$ ). In ONP patients, the mean dropped significantly  
230 from 12.3 (SD: 7) to 6.5 (SD: 4,  $Z = -3$ ,  $p = 0.003$ ). A two-way repeated measures ANOVA found no  
231 significant difference between the groups' changes in pre- and post-therapy HoNOS-ABI scores ( $F_{1,35}$   
232  $= 0.58$ ,  $p = 0.45$ , partial  $\eta^2 = 0.02$ ).

233 PHQ-9 data were available for 16 mFND patients and ten ONP control patients. Post-CBT, there was a  
234 statistically significant drop in mFND patients' scores from 13.5 (SD: 7) to 9.9 (SD: 6,  $t = 2.6$ ,  $df = 15$ ,  
235 95% CI: 0.6 – 6.5, two-tailed  $p = 0.02$ ). Using a repeated-measures two-way ANOVA, the interaction  
236 between the mFND and ONP groups and the change over time between the pre-and post-CBT  
237 assessment was not statistically significant ( $F_{1,24} = 0.22$ ,  $p = 0.64$ , partial  $\eta^2 = 0.01$ ). Figure 1 summarises  
238 both group's pre- and post-CBT scores on all measures.

239 For all three measures, we compared the socio-demographics of mFND patients with available scores  
240 to mFND patients with none available. No significant differences emerged.

## 241 Discussion

242 The results of this study suggest that outpatient CBT treatment for mFND has positive effects on motor  
243 symptoms, distress, depression, general health and social functioning. Half the group saw  
244 improvements in their physical symptoms and only a small proportion of mFND patients' symptoms  
245 got worse (8.2%).

246 We evaluated whether specific characteristics contribute to symptom improvement. Previous positive  
247 prognostic factors in FND include being married {26, 27} and younger age of onset {28, 29}. One study  
248 found females more likely to recover {3}, but this has not be found elsewhere {26, 30-32}. We found

249 no effect of gender, ethnicity, marital status, sexual abuse or age at symptom onset on symptom  
250 improvement. However, the long delay we observed between onset and the offer of treatment is a  
251 general concern for NHS services.

252 Our regression analysis revealed a strongly predictive variable in symptom improvement: acceptance  
253 of psychological accounts of symptoms prior to CBT onset, corroborating previous literature {27, 33,  
254 34}. By 'psychological', we do not mean psychodynamic, rather an information processing account  
255 invoking attentional processes, attribution errors and behavioural avoidance as well as appreciating  
256 temporal relationships between symptoms and 'stress', mood, anxiety or dissociation. It is possible  
257 that where patients do not accept a psychological formulation prior to therapy, CBT therapists may  
258 invest more time in explaining this perspective, patients may be less likely to utilise therapeutic tools  
259 within and outside the clinic and it may be more challenging to build a therapeutic alliance.

260 While symptom severity might independently explain symptom improvement and patients'  
261 acceptance of a psychological formulation prior to CBT, in our analysis, we used patients' walking aid  
262 usage as a symptom severity proxy and the predictive significance of pre-CBT psychological  
263 acceptance remained.

264 While pre-CBT acceptance of psychological explanations predicts patient improvement, in this study  
265 three mFND patients did not accept this explanation after CBT but nonetheless experienced  
266 symptomatic improvements. Saifee et al. (2012) argue that patients' psychological attributions could  
267 be used as a CBT selection criterion. Our findings suggests that, albeit in a small proportion of patients,  
268 improvement may be possible regardless of attribution {34}.

269 That only half the mFND group experienced physical symptom improvements might appear low, but  
270 previous literature indicates FND prognosis is poor. A systematic review found 39% of mFND patients  
271 had the same or worse symptoms at follow-up, and only 20% had complete remission {35}. Of these  
272 studies, some included patients who received heterogeneous treatments and of those, 49% were the

273 same or worse. One study reported results from an RCT testing CBT on patients with medically  
274 unexplained symptoms and at 12-month follow-up, 51% of patients maintained improvement, a  
275 finding comparable to our own {16}.

276 The goals of CBT in functional disorders may not always be the immediate reduction of physical  
277 symptoms but rather improvements in cognitions and behaviours associated with symptoms. Patients'  
278 goals are commonly discussed and agreed at the start of therapy. Had our symptom score derived  
279 purely from the goals set at the start of therapy, it is possible a higher proportion of patients would  
280 have been classed as 'improved'. Our use of routine medical records necessarily limits the type and  
281 range of measures we could employ.

282 The psychometric measures we collected showed significant improvements for both groups. The  
283 HoNOS-ABI is clinician-rated, and it is possible clinicians give more favourable scores at the end of  
284 treatment, due to bias. Most services however implement quality control measures such as  
285 independent assessors to help reduce such inflation of scores. Importantly, the CORE-OM and PHQ-9  
286 are self-report scales so are not subject to clinician bias. In our sample, a minority of patients in both  
287 groups had a complete set of pre- and post-treatment scores which may represent a biased sample.  
288 To account for this, we compared the socio-demographic differences between mFND patients who  
289 had pre- and post-CBT scores for each on all three outcome measures to those with a pre- or post-CBT  
290 score only or neither. No differences emerged. We conducted a further analysis, not reported here,  
291 assessing pre- and post-CBT scores according to the treating clinician, and found no differences.

292 There are several weaknesses inherent in this observational study. The observed improvement in  
293 measures may be explained by a placebo effect, a regression to the mean phenomenon, or other  
294 factors that were not measured, such as medication. Our findings do however suggest that response  
295 to CBT in functional patients is at least as good as that of patients with organic disease and significant  
296 psychological co-morbidities referred to the same service. In fact, the results in our control group

297 make a unique contribution to the literature on the range of disorders responsive to a tailored CBT  
298 intervention.

299 The numbers in our study are relatively small and our use of a medical register means any data errors  
300 cannot be corrected. We could not blind the data collector so we cannot rule out the possibility of  
301 observer bias on free-text information. This study comprised patients who are severe enough to  
302 require psychotherapy, but who are willing to accept such a referral. Patients who express overt  
303 opposition to psychological explanations will be less likely to be offered therapy and will not be  
304 represented here. The national referral status of the clinic may mean patients offered weekly  
305 appointments who live further from the clinic are not represented, a specific concern in this patient  
306 group with chronic motor deficits. In addition, we do not know whether the observed improvements  
307 were sustained over a longer period.

308 Finally, unlike a traditional RCT, clinicians were not following a treatment manual, and each patient in  
309 this study received a course of CBT tailored to their own needs. Our naturalistic results do not however  
310 have the imposition of strict selection criteria which can limit generalisability. Instead this study offers  
311 useful information on the practicalities of delivering CBT in the NHS. Most RCTs in FND do not describe  
312 why patients refuse treatment and our results are the first to provide such information, findings  
313 potentially pertinent to future service planning. Most importantly, we can reject the therapeutic  
314 nihilism sometimes associated with FND.

315 A future RCT with extensive follow-up would help confirm (or refute) our preliminary results, account  
316 for the placebo effect, establish which elements of CBT are most effective, which patients are most  
317 likely to respond to treatment and how long patients might expect to benefit after therapy cessation.

318

**319 Contributors**

320 ASD and NO designed the study. NO conducted data extraction and data analysis and wrote the first  
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**327 Competing interests**

328 None.

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436 **Figure Legend**

437 Figure 1: Line graphs demonstrating change in mean CORE-OM, HoNOS0ABI and PHQ-9 scores  
438 between mFND and ONP groups pre- and post-CBT

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440 **Table Legend**

441 Table 1: Table showing the socio-demographic characteristics of mFND and ONP control patients

442 Table 2: Logistic regression model assessing the relationship in socio-economic factors and patients'  
443 probability of improving by the end of therapy.

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455 **Tables**456 **Table 3** Table showing the socio-demographic characteristics of mFND and ONP control patients

Socio-demographics	mFND		ONP		$\chi^2$	95% CI	<i>p</i> value
	n	%	n	%			
<b>Gender</b>							
Female	71	72.4	34	44.7	13.6	12.2 – 41.9	<b>0.001</b>
Male	27	27.6	42	55.3			
<b>Ethnicity</b>							
British	66	67.3	54	71.1	0.3	-10.9 – 18	0.60
Any white background/any other ethnicity	15	15.3	11	14.5	0.02	-10.4 – 11.3	0.88
Any other black/Asian/African/Caribbean/Indian background <sup>1</sup>	17	17.3	11	14.5	0.24	-8.7 – 13.5	0.61
<b>Marital status</b>							
Single	42	42.9	44	57.9	3.8	-0.8 – 30	0.051
Married/civil partner/cohabiting	45	45.9	27	35.5	1.9	-4.3 – 24.3	0.17
Divorced/separated/widowed	11	11.2	5	6.6	1.08	-4.7 – 13.2	0.30
<b>Housing Type</b>							
Council tenant/supported/temp housing	11	11.2	8	10.5	0.02	-9.4 – 10	0.88
Living with family	20	25.6	12	19	0.86	-8.4 – 20.8	0.35
Privately owned/privately rented	47	60.3	43	68.3	0.96	-7.9 – 23	0.33
<b>Employment</b>							
Employed	33	34	37	48.7	3.8	-0.8 – 29.7	0.051
Unemployed	51	52.6	27	35.5	5	2.2 – 30.8	<b>0.03</b>
Other <sup>2</sup>	14	14.3	12	15.8	0.08	-9 – 12.8	0.78
Receives benefits	36	39.6	25	35.7	0.25	-12.1 – 19.4	0.61
Is a health or social care worker	20	21.3	11	14.9	1.1	-6.4 – 18.5	0.29
Has a carer	24	27.6	10	14.3	4.4	0.9 – 24.7	<b>0.04</b>
<b>Physical health condition present</b>							
	76	79.2	76	79.2	0.30	-9 – 16	0.62
<b>Abuse</b>							
History of child sexual abuse	19	23.8	5	8.2	7.3	4.5 – 25.9	<b>0.007</b>
History of child physical abuse	23	28.4	13	21	1.2	-5.7 – 19.7	0.27
History of adult SA or PA	19	23.8	19	16.1	1.6	-4.6 – 19.1	0.21
<b>History of family mental health problems</b>							
	51	63.8	51	63.8	0.009	-13.6 – 14.6	0.92
<b>Mean age<sup>3</sup></b>							
		SD		SD			
Age at analysis	44.5	12	45.4	13	1.3	-1.4 – 7.4	0.19
Age at symptom onset	30	14	27.8	15	3105.5		0.27
Age at CBT assessment	40.3	13	40.7	13	3669		0.87
<b>CBT attendance</b>							
	n	%	N	%			
Attended all sessions	55	56.1	43	56.6	0.004	-15-15.9	0.95
Dropped out early	28	28.6	20	26.3	0.11	-12 – 16.1	0.74
Therapist stopped sessions/sessions on-going	15	15.3	13	17.1	0.1	-9 – 13.4	0.75

<sup>1</sup>Includes proportion of patients where ethnicity was not know

<sup>2</sup>Other: retired/sick leave/medical retired/volunteering

<sup>3</sup>Mann-Whitney *U* Tests

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463 **Table 4** Logistic regression model assessing the relationship in socio-economic factors and patients'  
 464 probability of improving by the end of therapy.

Socio-demographics		Symptoms improved		Symptoms worsened, remained same*		Un-adjusted OR	95% CI	p value	Adjusted		
		n	%	n	%				OR <sup>1</sup>	95% CI	p value
<b>Total</b>		44	49.4	45	50.6						
<b>Gender</b>	Female	32	72.7	33	73.3	0.97	0.4 – 2.5	0.95	0.34	0.02 – 5.2	0.44
	Male	12	27.3	12	26.7						
<b>Ethnicity</b>	British	32	72.7	28	62.2	1.6	0.7 – 4	0.30	0.20	0.01 – 3.0	0.24
	Other ethnicity	12	27.3	17	37.8						
<b>Marital status</b>	Single, divorced, widowed or separated	24	54.5	24	53.3	1.05	0.5 – 2.4	0.91	1.7	0.1 – 25.2	0.72
	Married, civil partner or cohabiting	20	45.5	21	46.7						
<b>Work</b>	Employed	20	45.5	11	25	2.5	1 – 6.2	<b>0.05</b>	1	0.4 - 23	1
	Unemployed, retired or sick leave	24	54.5	33	75						
	Health/social care worker	14	33.3	6	14	3.1	1.1 – 9	<b>0.04</b>	21.1	0.3 - 1596	0.17
	Not a health/social care worker	28	66.7	37	86						
<b>Carer</b>	Patient is a family carer	5	11.9	5	11.9	1	0.3 – 3.7	1.0	0.06	0.01 – 5.6	0.22
	Patient is not a family carer	37	88.1	37	88.1						
	Patient has a carer	8	20	13	33.3	0.5	0.2 – 1.4	0.18	0.15	0.01 – 2.5	0.19
	Patient doesn't have a carer	32	80	26	66.7						
<b>Benefits</b>	Receives benefits	9	22	24	44.2	0.2	0.09 – 0.6	<b>0.002</b>	0.22	0.01 – 7.2	0.40
	Does not receive benefits	32	78	19	55.8						
<b>Disability</b>	Uses wheelchair or walking aid	15	36.6	26	63.4	0.3	0.14 – 0.8	<b>0.02</b>	0.94	0.1 – 10	0.96
	Doesn't use wheelchair	26	63.4	15	36.6						
<b>Psych factors</b>	Accepted psych factors before therapy	26	81.3	17	48.6	4.6	1.5 – 13.9	<b>0.007</b>	36.7	2.1 – 627	<b>0.02</b>
	Didn't accept psych factors before therapy	6	18.8	18	51.4						
<b>Abuse</b>	Experienced CSA	8	23.5	8	20.5	1.2	0.4 – 3.6	0.76	4.2	0.1 – 135	0.41
	Didn't experience CSA	26	76.5	31	79.5						
	Experienced CPA	13	63.9	8	20.5	2.2	0.8 – 6.2	0.14	14.5	0.36 – 592	0.16
	Didn't experience CPA	23	36.1	31	79.5						

\*Eight mFND patients got worse and nine control patients got worse

<sup>1</sup>Independent samples t-test

<sup>1</sup>Adjusted for gender, age of psychiatric symptom onset, ethnicity, marital status, employment, marital status, employment, social care worker status, whether patient has a carer, whether patient is a carer, receipt of welfare benefits, current wheelchair use, acceptance of psychological formulation before therapy, experience of childhood sexual abuse (CSA) and experience of childhood physical abuse (CPA).

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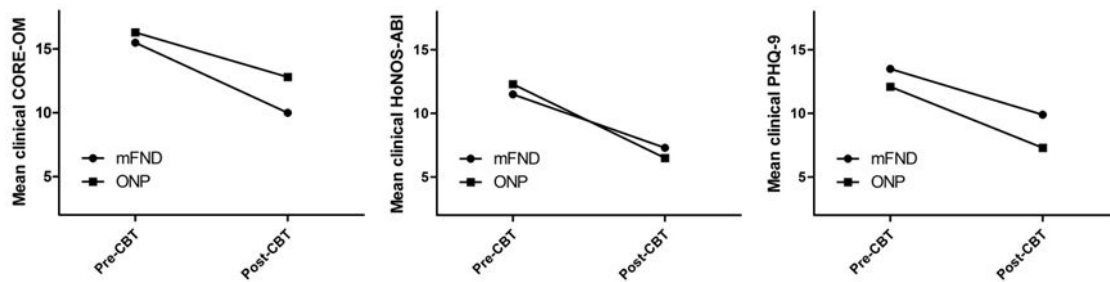
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**Figure 1** Line graphs demonstrating change in mean CORE-OM (mFND  $n = 24$ ; ONP  $n = 24$ ), HoNOS-ABI (mFND  $n = 22$ , ONP  $n = 15$ ) and PHQ-9 scores (mFND  $n = 16$ , ONP  $n = 10$ ) between mFND and ONP groups pre- and post-CBT

CORE-OM scores range from 0-40: Healthy (0-5); low level (5-10); mild (10-15); moderate (15-20); moderate-to-severe (20-25); severe (25 -40)

HoNOS-ABI scores range from 0 to 48 (most severe)

PHQ-9 scoring guide: '0-4' no depression; '5-9' mild; '10-14' moderate; '15-19' moderately severe; and '20-27' severe