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

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

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This paper is dedicated to the memory of Rosa Pastena, CBT therapist.

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

Abstract

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

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

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

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

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

Introduction

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

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

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

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

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

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

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

Method

Design and source of clinical data

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

Study setting and participants

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

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

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

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

Ethical approval

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

Outcome measures

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

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

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

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

Statistical analysis

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

Results

Patient characteristics

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

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

mFND patients were more likely to be female (72.4% v. 44.7%, χ^2: 13.6, 95% CI: 12.2 – 41.9, $p = 0.001$), 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 14.3%, $\chi 2$: 4.4, 95% CI: 0.9 – 24.7, $p = 0.04$) and to have experienced childhood sexual abuse compared to ONP patients (23.8% versus 8.2%, $\chi 2$: 7.3, 95% CI: 4.5 – 25.9, $p = 0.007$).

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

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

Openness to a psychological formulation

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

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

Treatment attendance

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

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

Outcomes

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

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

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

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

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

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

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

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

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

Discussion

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Contributors

ASD and NO designed the study. NO conducted data extraction and data analysis and wrote the first draft of this paper. All authors contributed to the editing of the paper and approved the final manuscript.

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Competing interests

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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Tables

Table 3 Table showing the socio-demographic characteristics of mFND and ONP control patients

	mFND		ONP				
Socio-demographics	n	%	n	%	χ^2	95% CI	*p* value
Gender							
Female	71	72.4	34	44.7	13.6	12.2 – 41.9	**0.001**
Male	27	27.6	42	55.3			
Ethnicity							
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[1]	17	17.3	11	14.5	0.24	-8.7 – 13.5	0.61
Marital status							
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
Housing Type							
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
Employment							
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	**0.03**
Other[2]	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	**0.04**
Physical health condition present	76	79.2	76	79.2	0.30	-9 – 16	0.62
Abuse							
History of child sexual abuse	19	23.8	5	8.2	7.3	4.5 – 25.9	**0.007**
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
History of family mental health problems	51	63.8	51	63.8	0.009	-13.6 – 14.6	0.92
Mean age[3]		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
CBT attendance	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

[1]Includes proportion of patients where ethnicity was not know
[2] Other: retired/sick leave/medical retired/volunteering
[3]Mann-Whitney *U* Tests

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 n	%	Symptoms worsened, remained same* n	%	Un-adjusted OR	95% CI	*p* value	Adjusted OR[1]	95% CI	*p* value
Total		44	49.4	45	50.6						
Gender	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						
Ethnicity	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						
Marital status	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						
Work	Employed	20	45.5	11	25	2.5	1 – 6.2	**0.05**	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	**0.04**	21.1	0.3 - 1596	0.17
	Not a health/social care worker	28	66.7	37	86						
Carer	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						
Benefits	Receives benefits	9	22	24	44.2	0.2	0.09 – 0.6	**0.002**	0.22	0.01 – 7.2	0.40
	Does not receive benefits	32	78	19	55.8						
Disability	Uses wheelchair or walking aid	15	36.6	26	63.4	0.3	0.14 – 0.8	**0.02**	0.94	0.1 – 10	0.96
	Doesn't use wheelchair	26	63.4	15	36.6						
Psych factors	Accepted psych factors before therapy	26	81.3	17	48.6	4.6	1.5 – 13.9	**0.007**	36.7	2.1 – 627	**0.02**
	Didn't accept psych factors before therapy	6	18.8	18	51.4						
Abuse	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

[1] Independent samples *t*-test

[1]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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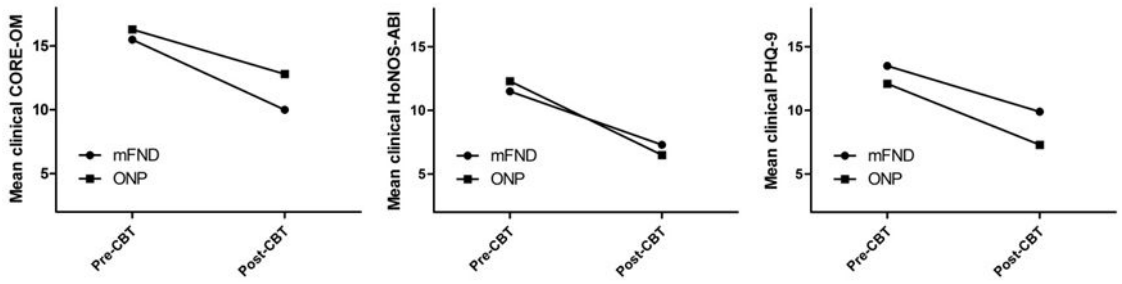

Figure 1 Line graphs demonstrating change in mean CORE-OM (mFND *n* =24; ONP *n* = 24), HoNOS-ABI (mFND *n* = 22, ONP *n* = 15) and PHQ-9 scores (mFND *n* = 16, ONP *n* = 10) between mFND and ONP groups pre- and post-CBT

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