SUPPLEMENTAL MATERIALS

Additional details of the MATCH-ADTC intervention:

The full Modular Approach to Therapy for Children with Anxiety, Depression, Trauma or Conduct problems (MATCH-ADTC) [1] is a psychological intervention which is compliant with UK recommended best-practice with modules that are selected to treat multiple common mental health disorders in youth. It is based on principles of cognitive behaviour therapy (CBT) and behavioural parenting interventions for managing behaviour problems, anxiety, depression and trauma in children. The treatment contains therapeutic procedures that correspond to the practices found in several leading evidence-based psychological treatments (EBTs), against which MATCH was compared in randomised trials. The MATCH-ADTC protocol and modular design, ensures that the needs of individuals with multiple mental disorders (40% of patients) are met – in contrast to the protocol for the majority of trials which address only single, specific disorders.

Additional information on the initial assessment:

Once families had consented and completed baseline measures, an initial assessment was carried out either over the telephone or face-to-face depending on participant preference. The low-intensity therapists were able to offer same day assessments. Any delays between identification and assessment were due to participant preference or competing demands on their time. During the initial assessment the following information was systematically collected by the low-intensity practitioner: history of presenting problem (e.g. nature of anxiety/low mood symptoms, onset, triggers etc.) and if this was interfering with current functioning, past medical history (e.g. diagnosis of epilepsy), family history, educational history, presence of active/past risk of harm to self (i.e. any history or current suicidal thoughts/thoughts of self-harm and/or suicide attempts/self-harm and/or risk of harm to others), presence of any neurodevelopmental diagnoses (e.g. autism spectrum disorder), past/current mental health assessment/treatment (e.g. previous psychological intervention by child and adolescent mental health services). Past/current mental health involvement was also cross-checked with the young person's medical notes. This could detect past/current psychology involvement within the hospital or reference previous involvement in the community. Possible major mental illness at assessment, was one of the reasons for offering the Development And Wellbeing Assessment (DAWBA) to participants [2]. The DAWBA is a package of interviews, questionnaires and rating techniques designed to generate ICD-10 and DSM-IV or DSM-5 psychiatric diagnoses on 2-17-year olds. The DAWBA covers the common emotional, behavioural and hyperactivity disorders, without neglecting less common but sometimes more severe disorders.

Triage details to determine which intervention/s participants were allocated to:

Following the initial assessment, all participants were discussed in a triage meeting with a consultant child and adolescent psychiatrist who decided which intervention participants were allocated to. Triage meetings took place weekly, so the longest time between assessment and triage would be seven days.

If participants presented with considerable risk (e.g. current thoughts of self-harm/suicide or current self-harm), a risk assessment was completed and – where indicated – they were referred urgently to their local CAMHS and a risk management plan put in place. If the main presenting problem was possible PTSD, psychosis, eating disorder or a severe emotional or behavioural problem, a referral to CAMHS was made. If the presenting problem, whether for

1

parent, child or sibling, was directly related to the physical health condition of the child (e.g. adjustment disorder/needle phobia/problems disclosing a medical diagnosis to peers) a referral was made to the paediatric psychologist attached to the relevant medical team within the hospital. If participants were actively receiving therapy from another therapist (e.g. having weekly sessions with a psychologist) the individual was signposted back to their therapist to avoid duplicating work.

In cases where the parent(s) presented with a mental health problem that was not related to their child's physical health condition they were signposted to their local Increasing Access to Psychological Therapy (IAPT) service and if required assisted with the self-referral process. If the families wanted information/support groups or presented with mild problems and did not want/require a low-intensity intervention they were signposted to resources (e.g. evidence-based self-help books or websites relevant to their child's condition like the National Autistic Society).

Where an undiagnosed neurodevelopmental condition (e.g. autism spectrum disorder or attention deficit hyperactivity disorder) was identified, additional assessments were offered. For young people presenting with anxiety, low mood and/or challenging behaviour a brief psychological intervention was offered. These categories were not mutually exclusive, and participants could be allocated to more than one.

Supplemental material

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Table 1S. Core demographics of the study population compared to others in the paediatric hospital and nation-wide hospitals are presented, along with the mean, standard deviation (SD) and interquartile range (IQR). IMD decile = Index of Multiple Deprivation.

		All participants (n= 186)	Hospital-wide data	t/U/χ²/z; p	Nation-wide data [3,4]	t/U/χ²/z; p
Age of <18s at the hospital in years, mean (SD)		9 (4)	7 (5)	-5.59; p<.001***	11 (3)	6.75; p<.001***
Age of parents, mean (SD)		39 (8)	-	-	-	-
IMD decile, median (IQR)		5 (3-9)	5 (3 – 8)	-	-	-
Gender, % (n/n total)	Female	62 (116/186)	51 (16586/32522)	9.11; p=.002**	47 (7565/16005)	16.21; p<.001***
	Male	38 (70/186)	49 (15936/32522)		53 (8440/16005)	
Ethnicity, % (n/n total)	White	62 (116/186)	62 (11089/17887)	0.79; p=1.00	82 (56370/68663)	31.80; p=<.001***
	Asian	11 (21/186)	16 (2862/17887)	1.94; p=.82	5 (3593/68663)	14.30; p=<.001***
	Black	10 (19/186)	9 (1610/17887)	0.45; p=1.00	5 (3569/68663)	9.86; p=.008**
	Any Mixed background	7 (13/186)	4 (716/17887)	4.23; p=.20	5 (3410/68663)	1.64; p=1.00
	Any other ethnicity	4 (8/186)	9 (1610/17887)	3.78; p=.26	3 (1721/68663)	2.16; p=.71
	Not stated/prefer not to say	5 (9/186)	-	-	-	-
Need for translator, % (n/n total)	*Yes*	4 (8/186)	4 (1301/32522)	<.001; p=.98	-	-
	No	96 (178/186)	96 (31221/32522)		-	-

Note: ** p< .01 *** p<.001

3

Table 2S. Comparison of core demographics between those were allocated to an intervention and those who dropped out between consent and being allocated, as presented using means, medians, standard deviations (SD) and or interquartile ranges (IQR). P values for paired-t-test and chi squared are also shown. IMD decile = Index of Multiple Deprivation.

		Allocated to an intervention (n=187)	Dropped out between consent and being allocated to an intervention (n=127)	t/χ^2; p
Age at the hospital in years, mean ± SD (range)		8.58 ± 4.63 (0-25)	9.03 ± 4.34 (1-18)	-.89, p=.38
IMD decile, median (IQR)		5 (3-9)	5 (3-7)	-1.46; p=.14
Gender, %	Female	62	62	<0.01; p=1.00
	Male	38	38	
Ethnicity, %	White	67	68	5.63; p=.34
	Asian	11	13	
	Black	10	12	
	Mixed	7	4	
	Other	4	2	
	Prefer not to say/not stated	0	2	
Primary recipient of the intervention, %	Patient	68	62	2.95; p=.22
	Parent / carer	24	32	
	Sibling	8	6	
	Prefer not to say/not stated	0	3	
Need for a translator, %	Yes	4	3	.262; p=.61
	No	96	97	

4

Table 3S. Comparison of demographics between those were completed the Client Satisfaction Questionnaire (CSQ) and those who did not, as presented by means, medians, standard deviations (SD) and or interquartile ranges (IQR). P values for Mann Whitney U and chi squared tests are also shown. IMD decile = Index of Multiple Deprivation

		Did not complete CSQ N=39	Completed CSQ N=117	U/χ^2; p
Age of ≤18s at the hospital in years, median (IQR)		9 (7-15)	10 (7-15)	2151.5; p= .29
IMD decile, median (IQR)		4 (2-8)	5 (3-9)	1707; p= .14
Gender, %	Female	62	63	0.037; p=.85
	Male	38	37	
Ethnicity[1], %	White	65	66	.154; p=.70
	Asian	4	13	5.94; p=.01[1]
	Black	11	11	.198; p=.77
	Any Mixed background	11	7	1.93; p=.18
	Any other ethnicity	6	3	2.08; p=.17
	Not stated/prefer not to say	2	2	3.02; p=.25

ı 6 Post-hoc 2x2 Fisher's Exact Tests were conducted following a significant Fisher's Exact Test between ethnicity groups and completion of CSQ (13.21; p = .011) [5]. Bonferroni corrections were made to account for the 6 pairwise comparisons creating an adjusted p value of .008 to be significant at the <.05 level. No significant differences were found in any ethnic groups when comparing participants who completed the experience of service questionnaire and those who did not.

6

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Table 4S. Comparing those who completed the Client Satisfaction Questionnaire (CSQ) and those who did not in terms of outcome measures: the strengths and difficulties questionnaire (SDQ) and the paediatric quality of life inventory (PEDS-QL).

Measure	Pre					Post				
	Completed CSQ		Did not complete CSQ			Completed CSQ		Did not complete CSQ		
	n	Median (IQR)	n	Median (IQR)	p	n	Median (IQR)	n	Median (IQR)	p
SDQ Total Score	117	18 (13-22)	39	16 (8-26)	.535	114	15 (10-22)	21	17 (8-26)	.789
Impact	113	3 (1-6)	39	2 (0-4)	.113	102	3 (0-5)	29	2 (0-4)	.375
Emotional	117	6 (3-8)	39	5 (2-7)	.237	114	5 (3-7)	21	5 (3-7)	.734
Conduct	117	2 (1-4)	39	4 (0-6)	.269	114	2 (1-4)	21	2 (1-5)	.286
Hyperactivity	117	6 (3-9)	39	5 (2-8)	.122	114	6 (3-8)	21	6 (2-9)	.833
Peer	117	4 (2-5)	39	3 (2-6)	.915	114	3 (1-5)	21	4 (1-6)	.518
Prosocial	117	8 (5-10)	39	6 (5-9)	.583	105	8 (5-10)	29	7 (5-10)	.469
PEDS-QL Total Score	70	54 (33-73)	22	57 (40-71)	.887	64	60 (42-82)	18	77 (39-95)	.145
Physical Health	70	53 (34-88)	22	58 (27-95)	.611	64	56 (38-84)	18	75 (40-100)	.207
Psychosocial Health	66	53 (32-68)	21	53 (38-68)	.831	64	61 (42-79)	14	58 (40-80)	.953
Emotional Functioning	70	45 (34-70)	22	45 (31-70)	.912	64	60 (35-75)	14	60 (26-76)	.580
Social Functioning	70	58 (25-80)	22	53 (34-75)	.901	64	70 (41-85)	14	70 (41-93)	.958
School Functioning	66	50 (33-75)	21	50 (35-65)	.823	64	55 (36-79)	14	68 (41-81)	.579

References:

1 Chorpita BF, Daleiden EL, Park AL, et al. Child STEPs in California: A cluster randomized effectiveness trial comparing modular treatment with community implemented treatment for youth with anxiety, depression, conduct problems, or traumatic stress. J Consult Clin Psychol. 2017;85(1):13-25. doi:10.1037/ccp0000133

2 Goodman R, Ford T, Richards H, Gatward R, Meltzer H. The development and well-being assessment: Description and initial validation of an integrated assessment of child and adolescent psychopathology. Journal of child psychology and psychiatry. 2000 Jul;41(5):645-55.

3 Wolpert M, Jacob J, Napoleone E et al. Child and Parent-reported Outcomes and Experience from Child and Young People's Mental Health Services 2011–2015. CORC CAHMS Press .2016 Dec

4 Edbrooke-Childs J, Macdougall A, Hayes D, et al Service-level variation, patient-level factors, and treatment outcome in those seen by child mental health services. European child & adolescent psychiatry. 2017 Jan;26(6):715-722.

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