

Literature review and clinical perspective of the management of Functional tic-like behaviors within a tertiary children's hospital in Birmingham England.

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Background

Since the start of the COVID-19 pandemic, tertiary centres for tic disorders and secondary care have witnessed a new surge in referral rates for sudden onset functional tic-like behaviours (FTLBs). ¹

Preexisting psychiatric and neurodevelopmental co-morbidities were found to be higher in this group of patients, with significant disease burden.¹ As experienced worldwide, referral rates for functional neurological disorders, including FLTBs, increased within Birmingham Children's Hospital (BCH).

Contemporaneously, there was no expert consensus with regards to diagnostic criteria for FTLBs or for its treatment in children and adolescents. This was evident from the referrals we received, with a potential risk for inadvertently misdiagnosing children with a tic disorder and therefore mistreating the symptoms, impacting negatively on prognosis.

We welcome the ESSTS consensus on diagnostic criteria recently published for FTLBs² which could help mitigate the diagnostic conundrum.

Aim

The objective of this review is to evaluate existing evidence base for the management of FTLBs and discuss the challenges in treatment pathways within BCH where there is no commissioned multidisciplinary tic disorder service.

Methods

We conducted a review of all literature published up until 05/03/2023 on various bibliographic data bases including; Pubmed, Embase, Medline and EMCare.

A title and abstract search was performed on search terms "functional tics" OR "functional movements" OR "tic like" OR "Tic attack" OR "Tic-like" AND "treatment" OR "Management" OR "behaviour management" OR "psychological management" OR "therapy" OR "therapies".

For paper selection numbers see Prisma diagram (figure 1.). A total of 7 articles have been included in this review meeting our inclusion criteria relevant to the management of FTLBs for under 18's.

Both the authors searched, shortlisted and read the articles independently.

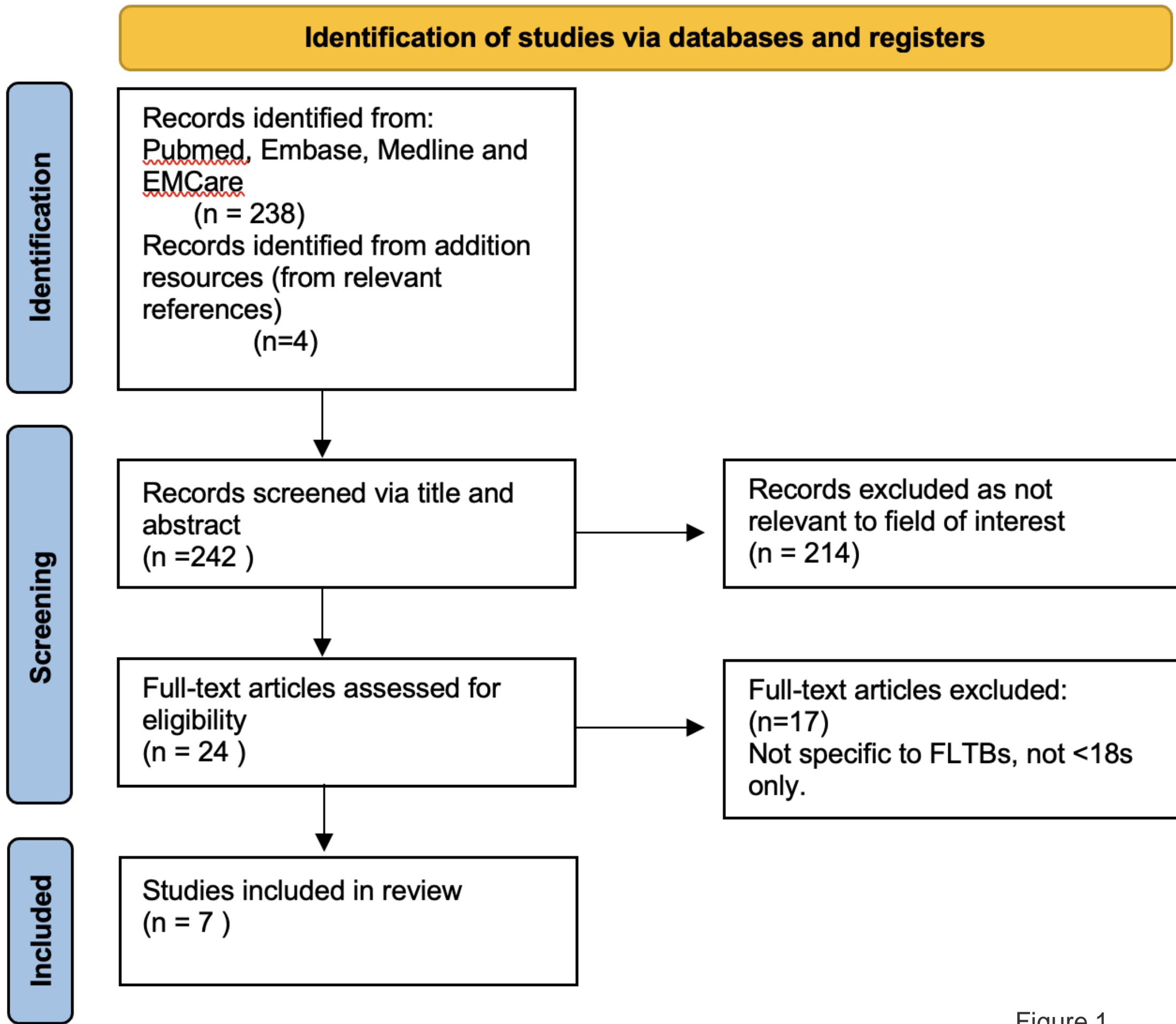
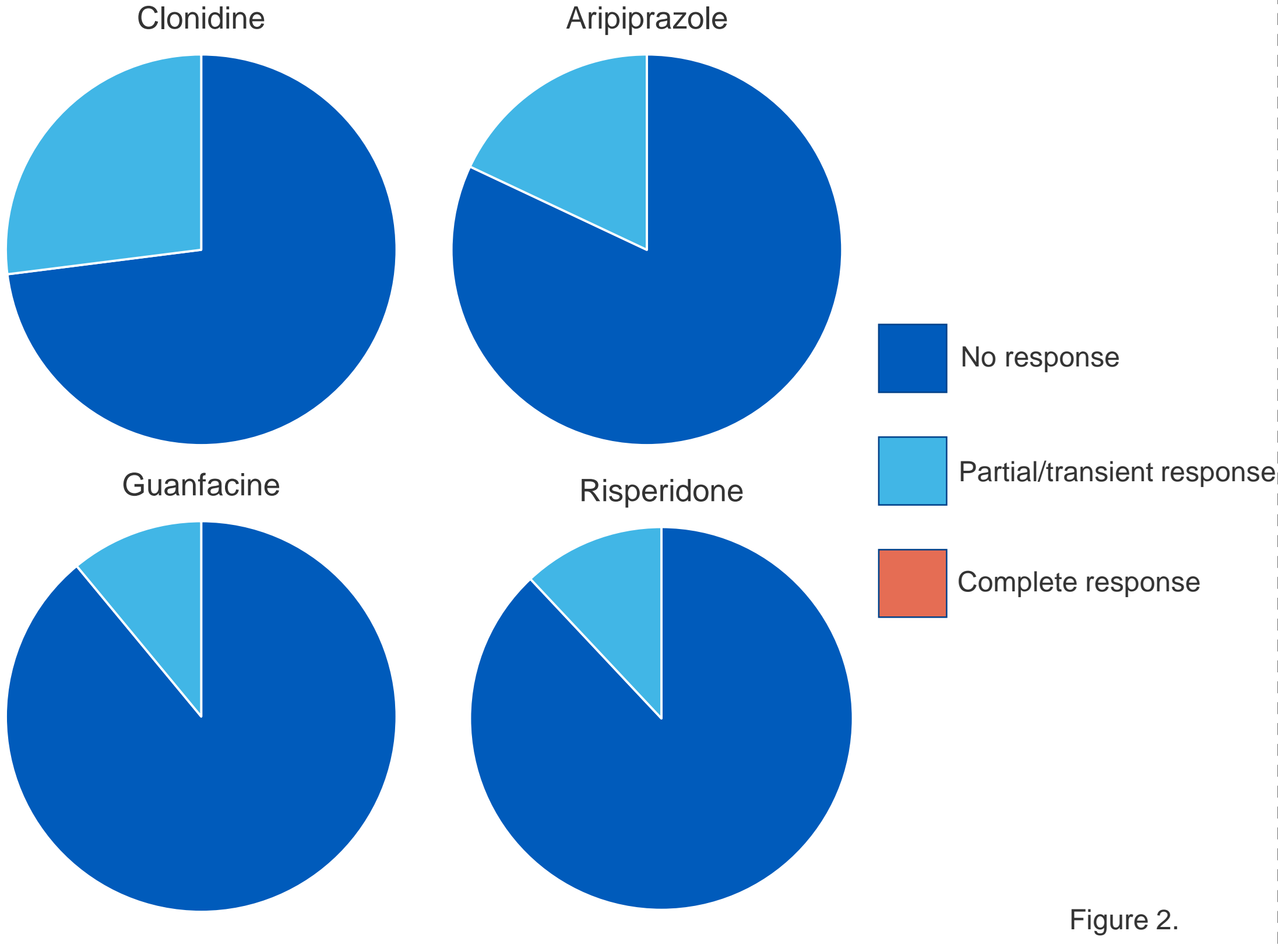


Figure 1.

Results

Study	Interventions	Outcomes & conclusions	Key Strengths & Limitations
Howlett et al. 2022 ³ Prospective Cohort N=20	Standard treatment of co-morbidities (Depression, ADHD, OCD, GAD and Panic attacks)	Significant improvement in Impairment and Global scores on YGTSS at 6 months (P=0.0005)	Small sample size 25% drop out rate at follow up
Prato et al. 2023 ⁴ Prospective Cohort N=11	CBT during follow-up period N=2 also received an unspecified pharmacological intervention	Participants at 12 months follow-up showed a mean reduction in YGTSS total score (25% reduction) N=2 with pharmacological interventions reported improvements in anxiety, sleep and partial relief of FTLBs	Small sample size Lack of details on CBT modalities, number of sessions or type of pharmacological interventions making any conclusions very hard to draw Unclear about follow-up length
Han et al. 2022 ⁵ Observational Retrospective Cohort N=22	No single intervention as observational but included medications such as alfa-2 adrenergic agonist, antidepressants and antipsychotics. About 3 rd were referred to specialized programme for management of FND in general.	Persistent symptoms in 68.2% Partial improvement in 18.2% Complete resolution in 13.6%	Study was not able to determine the response to treatment and predictors of good and poor outcomes as they were in the early stages of their treatment (medical and psychological therapies)
Martino et al. 2023 ⁶ Retrospective Cohort N=294	The use of various Anti-tic medications for FTLBs Clonidine N=122, Aripiprazole N=28, Guanfacine N=27 and Risperidone N=17	Treatment of FLTBs with tic supressing medications provides no clinical benefit in the Majority of individuals. Any improvement was either transient or partial. (see figure 2.)	Largest number cohort size High quality data from 10 tertiary referral centers for tic disorders Missing data on dosage, treatment duration, adherence, tic rating scale outcomes. Hence, data on treatment outcome was limited to whether any benefit from medications had been observed
Owen et al 2022 ⁷ Case series N=10	Various educational interventions on advice sheet such as 1.Reducing attention to movements at school 2. Supporting YP with their own management strategies 3. reasonable adjustments (extra time for exams)	6/ 10 showed reduction in symptoms and all 10 reported improvements in the time and quality of access to education. There were positive impacts on symptom reduction even in the absence of formal therapy.	1 st study to investigate impact on educational outcomes. Difficult to draw conclusions as no rigorous evaluation of the advice sheet and many YPs underwent other interventions simultaneously
Robinson et al. 2020 ⁸ Case series N=7 Underlying tic disorders	Complex intervention including, MDT assessment with biopsychosocial formulation, Psychoeducation and CBT with novel attention training components	CGAS improved significantly post treatment, (P <0.001) with all participants showing significant change in functioning based on Reliable Change Index (RCI). FTLBs resolved in 6, with reduction in FTLBs in 1.	Treatment strategies are clearly stated in the study with examples. Treatment approach developed by clinicians working in a tertiary movement disorder service. Generalisability of current findings to broader range of settings as well as children presenting with exclusively FTLB difficult.
Robinson et al. 2016 ⁹ Case series N=12 Underlying tic and anxiety disorders	13 sessions of therapy that included metacognitive and attention training techniques, as well as cognitive–behavioral strategies	Improvement was seen across a range of measures assessing tics (YGTSS), mood, anxiety (PHQ-9, GAD-7), and quality of life (GTS-QoL).	Good quality and well collected data Small sample size

Response rates to anti-tic medication



Conclusion

Studies included in this review have highlighted the following:

Assessment- Multidisciplinary biopsychosocial assessments and formulation of the presentation including functional analysis of the behaviours to inform treatment pathway has been found to be effective.

Treatment-Non-pharmacological interventions such as Psychoeducation, multiagency work with schools & social care, CBT for treatment of both FTLBs and co-morbidities. Psychological therapy including metacognitive and attention training techniques have been found to be effective.

Pharmacological: Anti-tic medications have not been effective in treating FTLBs, however, treating co-morbidities such as anxiety and depression with medications such as Selective Serotonin Reuptake Inhibitors have improved symptoms of FTLBs.

This evidence confirms our own experience from BCH, where assessments by multispecialty teams, including biopsychosocial formulations, along with clear guidelines such as the ESSTS consensus, are key for making an accurate diagnosis of FTLBs. We have found referral for ongoing interventions can be a challenge in already stretched mental health services. Further higher-level studies (RCTs) into these potentially effective interventions are needed and may help improve access to them in National Health Services.