



# Functional tic-like behaviours during the COVID-19 pandemic.

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## BACKGROUND

Functional tics are part of the wide spectrum of functional movement disorders. During the global pandemic caused by COVID-19, the social contexts for children and young people have been markedly different to what they had experienced before. In this period, the use of social media and websites such as Tik-Tok quickly expanded. In this study, we aim to investigate the phenomenology of newly diagnosed functional tic-like behaviours (FTLBs) in our outpatient Tourette Clinic, from June 2021 to December 2021, considering the general abrupt increase in tics during the COVID-19 pandemic.

Variable	TS/CTD (n= 233)	FTLBs (n=7)	P-value
Female, sex	25 (10.7%)	4 (57.1%)	0.005
Age, years	12.2 (± 3.5)	14.9 (± 2.3)	0.02
Age at onset	7.0 (± 2.7)	13 (± 4.4)	< 0.0001
Family history of Tic disorders	41 (17.6%)	3 (42.9%)	0.12
Presence of complex harm/hand motor tics	36 (15.45%)	7 (100%)	< 0.0001
Presence of complex vocal tics	25 (10.7%)	7 (100%)	< 0.0001
Presence of complex motor and vocal tics	21 (9.0%)	7 (100%)	< 0.0001
Presence of precipitating event/trigger	20 (8.6%)	3 (42.9%)	0.02
Premonitory sensations	43 (18.45%)	2 (28.6%)	0.62
Presence of echolalia	25 (10.7%)	7 (100%)	< 0.0001
Presence of coprolalia	21 (9.0%)	7 (100%)	< 0.0001
Presence of copropraxia	15 (6.4%)	7 (100%)	< 0.0001
Other psychosomatic manifestations	15 (6.4%)	3 (42.9%)	0.01
Pharmacological treatment	68 (29.2%)	6 (85.7%)	0.004
Cognitive Behavioural Therapy (CBT)	34 (14.6%)	5 (71.4%)	0.0015
Prior exposure to tics	41 (17.6%)	3 (42.9%)	0.12
Prior exposure to social media	21 (9.0%)	4 (57.1%)	0.003
Total QI	87.8 (± 18.2)	91.3 (± 15.9)	0.31
YGTSS total tic score	18.0 (± 7.4)	38.7 (± 14.7)	< 0.0001
CYBOCS score	7.4 (± 8.7)	19.4 (± 6.4)	0.0002
MASC total score	17.1 (± 24.4)	51.0 (± 29.4)	0.0003
CDI total score	18.0 (± 7.4)	12.1 (± 9.0)	0.0005

Table 1: Differences in demographics and clinical features between participants with FTLBs (n=7) and participants with TS/CTD (n=233)

## METHODS

We analyzed clinical data (n = 240) from June 2021 to December 2021 collected at the outpatient Tourette Clinic, Child and Adolescent Neurology and Psychiatry Unit, Catania University. We compared clinical features between patients affected by Tourette Syndrome (TS) and patients with FTLBs.

## RESULTS

Participants with FTLBs were more likely female and presented a mean age of 15 years old. Patients with FTLBs had also several characteristics including an explosive onset of complex tic-like behaviours and family-related emotional distress linked to tensions between parents and increased stress levels related to virtual schooling.

## DISCUSSION

The clinical features observed in our paediatric cohort are similar to the distinctive characteristics of FTLBs based on previous literature studies, with some exceptions. Common clinical features of our participants with FTLBs include female preponderance, later age of onset with abrupt and rapid progression of symptoms, and the presence of associated psychosomatic manifestations. Furthermore, in our small cohort affected by FTLBs there is a high percentage of a positive family history of tics and pali/echo/copro-phenomena, compared with other studies.

Authors	FTLBs/PTD	Female	Age at onset	Family history of PTD	Prior PTD	Abrupt onset	PUs	Precipitating trigger	Echolalia	Coprolalia	Copropraxia	Other psychosomatic manifestations	Prior exposure to social media
Before COVID-19 pandemic													
Mejia (2005)	17/155	34.8%	N.A.	38.7%	100%	0%	N.A.	64.7%	N.A.	N.A.	N.A.	N.A.	/
Baizabal-Carvallo (2014)	9/273	55.6%	34.1	0%	0%	N.A.	22.2%	N.A.	N.A.	N.A.	N.A.	100%	/
Demartini (2014)	11/0	27.3%	37.2	0%	0%	100%	18.2%	90.9%	0%	0%	0%	72.7%	/
Ganos (2016)	13/0	30.8%	25.3	0%	100%	76.9%	69.2 %	76.9%	38.5%	53.8%	7.7%	38.5%	/
After COVID-19 pandemic													
Pringsheim & Martino (2021)	9/24	100%	15.3	N.A.	22.2%	100%	100%	N.A.	N.A.	67%	N.A.	N.A.	100%
Pringsheim et al. (2021)	20/270	95%	13.9	N.A.	15%	100%	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	100%
Paulus (2021)	13/13	38.5%	15.31	7.7%	0%	92.3%	76.9%	N.A.	38.5%	38.5%	53.8%	N.A.	100%
Hull (2021)	6/0	100%	14.2	0%	0%	100%	33.3%	83.3%	N.A.	33.3%	N.A.	66.7%	100%
Han (2022)	22/163	100%	13.8	14%	27%	100%	N.A.	81.8%	N.A.	77%	45%	N.A.	18.2%
Buts (2022)	34/0	94%	13.7	N.A.	44%	100%	62%	N.A.	62%	62%	62%	N.A.	62%

Table 2: Summary of studies on functional tic-like behaviours before and after COVID-19 pandemic.

## CONCLUSIONS

Functional tics have increased during the COVID-19 pandemic in vulnerable children and adolescents. Organic tics and FTLBs share common features, making his differential diagnosis challenging, especially for nonexpert clinicians. A prompt diagnosis is recommended as these patients generally do not respond to conventional pharmacotherapies for tics, while they may benefit from cognitive behavioural therapies.

## References

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