

## Self-Injurious Behavior in Patients with Chronic Tic Disorders. New Insights and preliminary Validation of the Self-injurious Behaviour Scale (SIBS)

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### Background

1. **Self-injurious behavior (SIB)** is a well-known symptom in patients with chronic tic disorders (CTD) and Tourette syndrome (TS).
2. However, the database on SIB in TS is scarce and systematic studies in larger samples are missing.
3. This is also due to the fact that no **standardized instrument** is available measuring specifically SIB in TS.

### Methodology

1. To investigate for the first time prospectively the clinical spectrum and severity of SIB in adults with CTD/TS, we initially formulated 6 items to assess severity of SIB covering **number, frequency, intensity, resistance, control** over SIB and **impairment** (each rated on a scale from 0 to 5).
2. Using the internet platform SoSci-Survey, we performed an **online survey** and asked patients with CTD/TS to complete the SIB items and in addition a variety of further assessments for tics and comorbidities.
3. Moreover, we investigated **internal consistency** when combining all items to a draft scale and carried out an exploratory factor analysis (EFA).

### Results – Baseline characteristics

1. We enrolled **123** adult patients (n=82 males (66.7%), mean age 36.5 (SD 14.18)) with TS (n=102. 82.9%), CTD (n=13, 10.6%) and unspecified tic disorder (n=8, 6.8%).
2. SIB was reported by **103** patients (83.7%) with a mean age at onset of **15.2** years (SD 8.46).
3. On average, patients reported **2.9** (SD 1.26, range 1-5) different types of SIB with the most frequent types being **self hitting/head banging** (79.6 %), **pinching** (67.9%), and **biting/licking** (67.9%) with no difference between males and females (Table 1).

### Results – Comparison of SIB+ and SIB- Groups

1. Comparison of SIB+ and SIB – groups is presented in Table 2.
2. Self-assessed tic severity correlated positively with SIB severity ( $p=0.002$ ), in particular severity of vocal tics ( $p<0.001$ ) and complex tics ( $p=0.001$ ).
3. There was no correlation between SIB and OCD ( $p=0.177$ ).
4. There was a positive correlation between SIB severity and depression ( $p=0.005$ ), anxiety ( $p=0.001$ ), ADHD ( $p=0.008$ ) and BPD ( $p=0.01$ )
5. Higher SIBS scores were associated with greater impairment of quality (GTS-QoL) ( $p<0.001$ ).

### Results – SIBS Validation

1. Due to a comparatively low corrected item-total correlation and low loading in the EFA, the item "**resistance**" was excluded from the draft scale.
2. For the resulting scale – **the Self-Injurious Behaviour Scale** (SIBS, range, 0-20, higher values indicate greater severity) – an internal consistency of Cronbachs  $\alpha = 0.88$  was found.
3. The EFA supports a one-factor model which accounted for 61.6% of the variance across the items.

### Conclusions

1. Since we assume a selection bias, we think a true prevalence rate of SIB in TS cannot be calculated based on our data.
2. Anyhow, SIB can be regarded as a **common comorbidity in patients with TS**.
3. From our results, it is strongly suggested that SIB can be regarded as a specific type of a **complex tic** rather than a compulsive behavior.
4. This finding has major implications with respect **to treatment of SIB**.
5. Finally, we were able to demonstrate that SIB significantly **impairs patients' quality of life**, which even results in increased rates of depression.

Table 1. Frequency of different types of SIB in patients with TS

Type of SIB	SIB execution (%)
Beating/pushing/throwing	79.6
Scratching	67.9
Biting and licking	67.9
Manipulation in the teeth	45.6
Manipulation in the eyes	30.1
Self burning	30.1
Trichotillomania	20.4

SIB – self-injurious behaviors, TS – Tourette syndrome

Table 2. Characteristic of patients with self-injurious behaviours (SIB+) and without (SIB-).

Parameter	SIB+	SIB-	P
Male, n (%)	67 (65%)	15 (75%)	0.651
Age (mean, SD)	35.95 (14.37)	39.5 (13.06)	0.308
Tic medication, n (%)	59 (57.3%)	10 (50%)	0.548
ADHD, n (%)	23 (22.3%)	3 (15%)	0.463
OCD, n (%)	40 (38.8 %)	5 (25 %)	0.240
Depression, n (%)	59 (57.3 %)	9 (45 %)	0.312
Anxiety disorder, n (%)	31 (30.1 %)	5 (25 %)	0.647
ASD, n (%)	8 (7.8 %)	3 (15 %)	0.300
Sleep disorder, n (%)	21 (20.4 %)	5 (25 %)	0.644
Eating disorder, n (%)	12 (11.7 %)	0 (0%)	0.108
Alcohol and/or substance abuse, n (%)	2 (1.9 %)	1 (5 %)	0.417
BPD, n (%)	5 (4.9 %)	0 (0%)	0.314
Other personality disorder, n (%)	11 (10.7 %)	1 (5%)	0.433
ATQ (mean, SD)	63.03	36.65	0.001
GTS-QoL (mean, SD)	37.06	21.5	0.002
QoL-VAS (mean, SD)	55.73	64.0	0.095
OCI-R (mean, SD)	18.26	6.6	< 0.001
ADHS-SB (mean, SD)	19.47	10.65	< 0.001
BDI-II (mean, SD)	14.44	10.0	0.026
BAI (mean, SD)	14.06	6.5	0.001
RAQ-R	18.92	12.25	0.075
BSL-23	17.26	9.8	0.010
I-8	2.33	1.82	0.05

SIB – self-injurious behaviours, SD – standard deviation, TS –Tourette syndrome, CMTD – chronic motor tic disorder, CVTD – chronic vocal tic disorder, UTD-unspecified tic disorder, ADHD – attention deficit hyperactivity disorder, OCD – obsessive-compulsive disorder, ASD – autism spectrum disorder, BPD – borderline personality disorder, ATQ – Adult Tic Questionnaire, GTS-QoL – Gilles de la Tourette Syndrome-Quality of Life Scale, QoL-VAS – Quality of Life Visual Analogue Scale, OCI-R – Obsessive-Compulsive Inventory-Revised, ADHS-SB – ADHS-Selbstbeurteilungsbogen, BDI-II – Beck Depression Inventory-II, BAI – Beck Anxiety Inventory, RAQ-R – Rage Attack Questionnaire-Revised, BSL-23 – Borderline Symptom List, I-8 – Die Skala Impulsives-Verhalten-8