

Supplemental Material S3. Characteristics of included studies.

Study and Reference	Study Quality ^a	Country	Design ^b	<i>n</i> ^c	Age Range	Sex, M:F ^d	Diagnostic Method ^e	Ankyloglossia Severity	Anterior: Posterior ^d	Comorbidities	Outcomes Assessed
Baxter, 2018	High	USA	Case report, R	1	9 y	1:0	Clinician	–	1:0	Autism (1)	Speech, eating, sleep
Baxter & Hughes, 2018	Medium	USA	Case series, R	5	17 m-11 y	3:2	Kotlow	Grade I (1), Grade II (4)	–	–	Speech, eating, swallowing, sleep
Baxter et al., 2021	Medium	USA	Cohort/cross-sectional, P	314	1-14.8 y	149:165	TRMR	Grade I (80), Grade II (161), Grade III (64), Grade IV (9)	–	Attention deficit hyperactivity disorder (45)	Speech, eating, sleep
Baxter et al., 2020	Medium	USA	Pre-post, P	37	13 m-12 y	23:14	Kotlow	–	–	–	Speech, eating, swallowing, sleep
Belmehdi et al., 2018	Medium	Morocco	Case series, R	2	13-15 y	1:1	Kotlow	Grade II (1)	–	Malocclusion (1)	Speech, dental
Brooks et al., 2020	High	USA	Case report, R	1	21 m	1:0	Clinician	–	–	Respiratory infections (1)	Speech, eating, swallowing
Brożek-Mądry et al., 2021	Medium	Poland	Case-control, P	20 (135)	4-17 y	– ^g	Kotlow	≥ Grade I	–	–	Sleep
Calvo-Henríquez et al., 2021	Medium	Spain	Case-control, P	50 (100)	4.1-14.9 y	35:15	LFPI	5.48 ± 1.47	1:0	–	Dental
Fioravanti et al., 2021	High	Italy	Controlled intervention, P	32	4-13 y	18:14	Kotlow	Mean free tongue length 17.315 ± 0.445 mm	3:–	–	Sleep
Fleiss et al., 1990	Medium	USA	Case series, R	1 ^f	13 y	1:0	Clinician	–	–	–	Speech, eating
Govardhan et al., 2019	High	USA	Case report, R	1	3.6 y	0:1	TRMR	Grade IV (1)	1:0	Malocclusion, anterior-posterior maxillary deficiency, lip-tie, asthma (1)	Speech, eating, swallowing, sleep, dental
Guilleminault et al., 2016	Medium	USA	Cohort/cross-sectional, R	63 (150)	3-12 y	34:29	Kotlow	≥ Grade I	–	–	Speech, eating, swallowing, sleep
Hamamci et al., 2010	High	Turkey	Case report, R	1	13.8 y	1:0	Clinician	Complete	–	Malocclusion, reversed overjet, mandibular crowding, maxillary deficiency, diastema (1)	Speech, eating, social, dental

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Huang et al., 2015	Medium	USA	Cohort/cross-sectional, R	27	2-16 y	18:9	Clinician	–	–	Abnormal Mallampati-Friedman score (22), tonsillar hypertrophy (10), dental crowding (5)	Speech, eating, swallowing, sleep, dental
Jaiswal et al., 2022	Medium	India	Case series, R	4	3-12 y	3:1	TRMR	Grade IV (2)	–	Austism and cerebral palsy (1), dental caries (1)	Speech, eating, social
Junqueira et al., 2014	Medium	Brazil	Case series, R	5	2-11 y	3:2	Clinician	–	–	–	Speech, social
Melong et al., 2021	Medium	Canada	Pre/post, P	25	24-87 m	20:5	Modified HATLFF	Moderate, severe	–	–	Speech, eating
Messner & Lalakea, 2002	Medium	USA	Pre-post, P	30	1-12 y	19:11	Tongue elevation and protrusion	Elevation 5.2 ± 5.6 mm; protrusion 14.2 ± 5.5 mm	–	–	Speech, social, mechanical
Nicholson, 1991	Medium	Australia	Case series, R	2	1.5-2.5 y	2:0	Clinician	–	–	–	Speech, social
Oh et al., 2021	Medium	USA	Cohort/cross-sectional, P	— ^g (96)	6-12 y	— ^g	Kotlow, TRMR	≥ Grade I (Kotlow); TRMR Grade III-IV	–	Tonsillar hypertrophy, narrow palate	Sleep
Pottamal et al., 2021	Medium	India	Case series, R	2	7-9 y	1:1	Kotlow	Grade II (1)	–	–	Speech
Salt et al., 2020	Medium	Australia	Cohort/cross-sectional, P	38 (59)	30-59 m	17:21	Clinician	–	52:185	–	Speech
Villa et al., 2020	Medium	Italy	Cohort/cross-sectional, P	114 (504)	6-14 y	–	Kotlow	≥ Grade I	–	Obesity (11.7%)	Sleep
Walls et al., 2014	Medium	USA	Cohort/cross-sectional, R	86 (104)	3 y	–	Coryllos	Class I (20), Class II (44), Class III (22), Class IV (0)	–	–	Speech
Yuen et al., 2022	High	China	Case-control, P	26 (82)	5-12 y	— ^g	Kotlow, tongue mobility	≥ Grade I (Kotlow); < 60% tongue mobility	–	–	Sleep
Zhao et al., 2022	Medium	China	Controlled intervention, P	341	2-5 y	173:176	Kotlow, BTAT	Grade III-IV (Kotlow); BTAT < 3	–	–	Speech

^a Assessed using the National Heart, Lung, and Blood Institute (NHLBI) quality assessment tools. Ratings describe quality, not risk of bias.

^b P: prospective, R: retrospective.

^c Patients with ankyloglossia (any controls without ankyloglossia excluded). Total sample size given in parentheses if different from ankyloglossia-specific *n*.

^d Values are raw counts.

^e BTAT: Bristol Tongue Assessment Tool; HATLFF: Hazelbaker Assessment Tool for Lingual Frenulum Function; LFPI: Lingual Frenulum Protocol for Infants; TRMR: tongue range of motion ratio. “Clinician” indicates unstandardized manual and visual assessment.

^f Infant and adult patient excluded.

^g Not reported for the ankyloglossia subset.