Supplemental Material S4. Overview of all studies included in this systematic review and description of which study that contributed with what type of data to which analysis.

In the table below, we list the 34 studies included in this systematic review. Each study contributed with data to different analyses depending on the outcomes measured and what data could be obtained. We aimed to obtain individual participant data (IPD) from each study but could not do so from all. In the table, we list for each study what outcomes was measured and if the data could be meta-analyzed (and how the IPD was obtained) or if only aggregated data could be narratively summarized (presented in Table 6) and why IPD could not be obtained.

Study	Speech	Language	Intelligibility	PRO
Albery & Enderby, 1984	Aggregate S7 (IPD not sought)			
Alighieri, Bettens, Bruneel, D'haeseleer, et al., 2020	Aggregate S7 (IPD not received)			
Alighieri, Bettens, Bruneel, Sseremba, et al., 2020	Aggregate S7 (IPD not received)			
Alighieri et al., 2019	Meta-analysis (IPD from article)		IPD in Table 3 (IPD from article)	
Chisum et al., 1969	Aggregate S7 (IPD not sought)			
Derakhshandeh et al., 2016	Meta-analysis (IPD from article)			
Dobbelsteyn et al., 2014	Meta-analysis (IPD from article)			
Ha, 2015	Aggregate S7 (IPD not received)			
Hanchanlert et al., 2015	Meta-analysis (IPD from article)	IPD in Table 3 (IPD from article)	IPD in Table 3 (IPD from article)	
Hardin-Jones & Chapman, 2008	Aggregate S7 (IPD not sought)			
Lindeborg et al., 2020	Meta-analysis (IPD upon request)			
Luyten et al., 2016	Meta-analysis (IPD from article)		IPD in Table 3 (IPD from article)	
Makarabhirom et al., 2015	Meta-analysis (IPD from article)			
Pamplona et al., 2005	Aggregate S7 (IPD not received)			
Pamplona et al., 2012	Aggregate S7 (IPD not received)			
Pamplona et al., 2014	Meta-analysis (IPD from article)			
Pamplona et al., 2015		See result section (IPD not received)		
Pamplona et al., 2017	Meta-analysis (IPD from article)			
Pamplona & Ysunza, 2000		IPD in Table 3 (IPD from article)		

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Domolono & Vounzo	Moto analysis			
Pamplona & Ysunza, 2018	Meta-analysis (IPD from article)			
2018	1			
Prathanee, 2011	Meta-analysis			
	(IPD from article)			
Prathanee et al., 2014	Meta-analysis			
	(IPD from article)			
Prathanee et al., 2020	Meta-analysis	IPD in Table 3	IPD in Table 3	
	(IPD from article)	(IPD from article)	(IPD from article)	
Prins & Bloomer, 1965			IPD in Table 3	
			(IPD from article)	
Pumnum et al., 2015	Meta-analysis	IPD in Table 3	IPD in Table 3	
	(IPD from article)	(IPD from article)	(IPD from article)	
Roxburgh et al., 2016	Meta-analysis			
	(IPD from article)			
Scherer et al., 2008	Meta-analysis			
	(IPD from article)			
Scherer et al., 2020	Aggregate S7			
	(IPD not received)			
Sell & Grunwell, 1990	Aggregate S7			
	(IPD not sought)			
Sritacha et al., 2016	Meta-analysis	IPD in Table 3	IPD in Table 3	
	(IPD from article)	(IPD from article)	(IPD from article)	
Sweeney et al., 2020	· · · ·	(IPD in Table 3 (IPD upon request)	IPD in Table 3
	Meta-analysis			(IPD upon
	(IPD upon request)			request)
Van Demark, 1971	Aggregate S7			request
	(IPD not sought)			
Van Demark, 1974	Aggregate S7			
	(IPD not sought)			
Van Damark 9. Hardin	, ,			
Van Demark & Hardin, 1986	Meta-analysis			
1300	(IPD from article)			

Note. Meta-analysis = IPD data could be formally analyzed in the two meta-analyses presented in Figure 2 and 4 and elsewhere in the manuscript. Aggregate S7 = Aggregate data could only be narratively summarized in Supplementary material S7. IPD in Table 3 = IPD is presented in Table 3, but not meta-analytically averaged. IPD from article = IPD could be tabulated directly from article. IPD upon request = after contacting the authors, we received IPD. IPD not received = after contacting the authors, we did not receive IPD. IPD not sought = We did not request IPD from six studies published between 13 and 50 years ago because we judged it unlikely that we would obtain it.

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References

- Albery, L., & Enderby, P. (1984). Intensive speech therapy for cleft palate children. *British Journal of Disorders* of Communication, 19(2), 115–124.
- Alighieri, C., Bettens, K., Bruneel, L., D'haeseleer, E., Van Gaever, E., & Van Lierde, K. (2020). Effectiveness of speech intervention in patients with a cleft palate: Comparison of motor-phonetic versus linguisticphonological speech approaches. *Journal of Speech, Language, and Hearing Research, 63*(12), 3909– 3933. https://doi.org/10.1044/2020 JSLHR-20-00129
- Alighieri, C., Bettens, K., Bruneel, L., Sseremba, D., Musasizi, D., Ojok, I., & Van Lierde, K. (2020). Comparison of motor-phonetic versus phonetic-phonological speech therapy approaches in patients with a cleft (lip and) palate: A study in Uganda. *International Journal of Pediatric Otorhinolaryngology*, 131, 109849. https://doi.org/10.1016/j.ijporl.2019.109849
- Alighieri, C., Bettens, K., Bruneel, L., Vandormael, C., Musasizi, D., Ojok, I., D'haeseleer, E., & Van Lierde, K.
 (2019). Intensive speech therapy in Ugandan patients with cleft (lip and) palate: A pilot-study assessing long-term effectiveness. *International Journal of Pediatric Otorhinolaryngology*, *123*, 156–167. https://doi.org/10.1016/j.ijporl.2019.05.007
- Chisum, L., Shelton, Jr., R. L., Arndt, Jr., W. B., & Elbert, M. (1969). The relationship between remedial speech instruction activities and articulation change. *Cleft Palate Journal*, *6*, 57–64.
- Derakhshandeh, F., Nikmaram, M., Hosseinabad, H. H., Memarzadeh, M., Taheri, M., Omrani, M., Jalaie, S., Bijankhan, M., & Sell, D. (2016). Speech characteristics after articulation therapy in children with cleft palate and velopharyngeal dysfunction – A single case experimental design. *International Journal of Pediatric Otorhinolaryngology, 86*, 104–113. https://doi.org/10.1016/j.ijporl.2016.04.025
- Dobbelsteyn, C., Bird, E. K., Parker, J., Griffiths, C., Budden, A., Flood, K., & Stilson, A. (2014). Effectiveness of the corrective babbling speech treatment program for children with a history of cleft palate or velopharyngeal dysfunction. *Cleft Palate-Craniofacial Journal*, *51*(2), 129–144. https://doi.org/10.1597/12-188
- Ha, S. (2015). Effectiveness of a parent-implemented intervention program for young children with cleft palate. International Journal of Pediatric Otorhinolaryngology, 79(5), 707–715. https://doi.org/10.1016/j.ijporl.2015.02.023
- Hanchanlert, Y., Pramakhatay, W., Pradubwong, S., & Prathanee, B. (2015). Speech correction for children with cleft lip and palate by networking of community-based care. *Journal of the Medical Association of Thailand*, *98*, S132-139.
- Hardin-Jones, M., & Chapman, K. L. (2008). The impact of early intervention on speech and lexical development for toddlers with cleft palate: A retrospective look at outcome. *Language, Speech, and Hearing Services in Schools, 39*(1), 89–96. https://doi.org/10.1044/0161-1461(2008/009)
- Lindeborg, M. M., Shakya, P., Pradhan, B., Rai, S. K., Gurung, K. B., Niroula, S., Rayamajhi, B., Chaudhary, H.,
 Gaire, B., Mahato, N., Rana, L., Rokaya, P., Shrestha, N., Shrestha, R., Tamang, J., Joshi, H. D., Gaha, P.,
 Khorja, D. K., Nakarmi, K. K., ... Shaye, D. A. (2020). A task-shifted speech therapy program for cleft
 palate patients in rural Nepal: Evaluating impact and associated healthcare barriers. *International Journal of Pediatric Otorhinolaryngology*, *134*, 110026. https://doi.org/10.1016/j.ijporl.2020.110026
- Luyten, A., Bettens, K., D'Haeseleer, E., Hodges, A., Galiwango, G., Vermeersch, H., & Van Lierde, K. (2016). Short-term effect of short, intensive speech therapy on articulation and resonance in Ugandan patients with cleft (lip and) palate. *Journal of Communication Disorders*, *61*, 71–82.
- Makarabhirom, K., Prathanee, B., Suphawatjariyakul, R., & Yoodee, P. (2015). Speech therapy for children with cleft lip and palate using a community-based speech therapy model with speech assistants. *Journal of the Medical Association of Thailand*, *98*, S140-150.
- Pamplona, C., Silis, S. C., Ysunza, P. A., & Morales, S. (2015). Metacognitive strategies for enhancing language development in children with cleft palate. *European Journal of Plastic Surgery*, *38*(5), 377-384.
- Pamplona, C., & Ysunza, A. (2000). Active participation of mothers during speech therapy improved language development of children with cleft palate. Scandinavian Journal of Plastic & Reconstructive Surgery & Hand Surgery, 34(3), 231–236.
- Pamplona, C., & Ysunza, A. (2018). Deliberate practice: Preliminary results of a useful strategy for correcting articulation in children with cleft palate. *Journal of Craniofacial Surgery, 29*(6), 1490–1494. https://doi.org/10.1097/SCS.00000000004707
- Pamplona, C., Ysunza, A., Chavelas, K., Aramburu, E., Patino, C., Marti, F., & Morales, S. (2012). A study of strategies for treating compensatory articulation in patients with cleft palate. *Journal of Maxillofacial* & Oral Surgery, 11(2), 144–151.

Supplemental material, Sand et al., "On the Benefits of Speech-Language Therapy for Individuals Born With Cleft Palate: A Systematic Review and Meta-Analysis of Individual Participant Data," *JSLHR*, <u>https://doi.org/10.1044/2021_JSLHR-21-00367</u>

- Pamplona, C., Ysunza, A., & Morales, S. (2014). Strategies for treating compensatory articulation in patients with cleft palate. *International Journal of Biomedical Science*, *10*(1), 43–51.
- Pamplona, C., Ysunza, A., & Morales, S. (2017). Audiovisual materials are effective for enhancing the correction of articulation disorders in children with cleft palate. *International Journal of Pediatric Otorhinolaryngology*, 93, 17–23. https://doi.org/10.1016/j.ijporl.2016.12.011
- Pamplona, C., Ysunza, A., Patino, C., Ramirez, E., Drucker, M., & Mazon, J. J. (2005). Speech summer camp for treating articulation disorders in cleft palate patients. *International Journal of Pediatric Otorhinolaryngology*, 69(3), 351–359. https://doi.org/0.1016/j.ijporl.2004.10.012
- Prathanee, B. (2011). Cost effectiveness of speech camps for children with cleft palate in Thailand. *Journal of the Medical Association of Thailand*, *94*, S33-39.
- Prathanee, B., Makarabhirom, K., Jaiyong, P., & Pradubwong, S. (2014). Khon Kaen: A community-based speech therapy model for an area lacking in speech services for clefts. *Southeast Asian Journal of Tropical Medicine & Public Health*, *45*(5), 1182–1195.
- Prathanee, B., Pumnum, T., Yoodee, P., & Makarabhirom, K. (2020). Speech therapy model for patients with cleft palate in Lao People's Democratic Republic: Lack of speech services. *International Journal of Pediatric Otorhinolaryngology*, *138*, 110366. https://doi.org/10.1016/j.ijporl.2020.110366
- Prins, D., & Bloomer, H. H. (1965). A word intelligibility approach to the study of speech change in oral cleft patients. *Cleft Palate Journal*, *2*, 357–368.
- Pumnum, T., Kum-ud, W., & Prathanee, B. (2015). A networking of community-based speech therapy: Borabue District, Maha Sarakham. *Journal of the Medical Association of Thailand*, *98*, S120-127.
- Roxburgh, Z., Cleland, J., & Scobbie, J. M. (2016). Multiple phonetically trained-listener comparisons of speech before and after articulatory intervention in two children with repaired submucous cleft palate. *Clinical Linguistics & Phonetics*, *30*(3), 398–415. https://doi.org/10.3109/02699206.2015.1135477
- Scherer, N. J., D'Antonio, L. L., & McGahey, H. (2008). Early intervention for speech impairment in children with cleft palate. *Cleft Palate-Craniofacial Journal*, *45*(1), 18–31.
- Scherer, N. J., Kaiser, A. P., Frey, J. R., Lancaster, H. S., Lien, K., & Roberts, M. Y. (2020). Effects of a naturalistic intervention on the speech outcomes of young children with cleft palate. *International Journal of Speech-Language Pathology*, 22(5), 549–558. https://doi.org/10.1080/17549507.2019.1702719
- Sell, D. A., & Grunwell, P. (1990). Speech results following late palatal surgery in previously unoperated Sri Lankan adolescents with cleft palate. *Cleft Palate Journal*, *27*(2), 162–168; discussion 174-165.
- Sritacha, P., Pumnum, T., & Prathanee, B. (2016). Speech correction for children with cleft lip and palate in community: Kantharawichai Networking. *Journal of the Medical Association of Thailand*, *99*, S1-8.
- Sweeney, T., Hegarty, F., Powell, K., Deasy, L., Regan, M. O., & Sell, D. (2020). Randomized controlled trial comparing Parent Led Therapist Supervised Articulation Therapy (PLAT) with routine intervention for children with speech disorders associated with cleft palate. *International Journal of Language & Communication Disorders*, 55(5), 639–660. https://doi.org/10.1111/1460-6984.12542
- Van Demark, D. R. (1971). Articulatory changes in the therapeutic process. Cleft Palate Journal, 8, 159–166.
- Van Demark, D. R. (1974). Some results of speech therapy for children with cleft palate. *Cleft Palate Journal*, 11(1), 41–49.
- Van Demark, D. R., & Hardin, M. A. (1986). Effectiveness of intensive articulation therapy for children with cleft palate. *The Cleft Palate Journal*, 23(3), 215–224.