Table S1. Adherence to the PRISMA statement.

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Page 1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 1-2
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 2
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 3
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 3
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 3 Table S1
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 3
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Page 3
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 3
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Page 4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 4
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Page 4
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 4
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Page 4

Section and Topic	Item #	Checklist item	Location where item is reported
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Page 4
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 4
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Page 4
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Page 4
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	NA
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Page 4
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 4 Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Table S2 Table S3
Study characteristics	17	Cite each included study and present its characteristics.	Table 1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Figure 2
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimates and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Table 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Page 10 Page 11
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Table 3
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Page 13
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Figure 3
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Figure 4
DISCUSSION			
14Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 14
	23b	Discuss any limitations of the evidence included in the review.	Page 14-15

Section and Topic	Item #	Checklist item	Location where item is reported
	23c	Discuss any limitations of the review processes used.	Page 16
	23d	Discuss implications of the results for practice, policy, and future research.	Page 17
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 3
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Page 3
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 17
Competing interests	26	Declare any competing interests of review authors.	Page 17
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Page 17

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Table S2

Combinations of keywords used during electronic literature searches (last updated search 2024/01).

	Keywords	Results
PubMed	(Sleep [All Fields] OR obstructive sleep apnea [MeSH Terms]) AND (infant [All Fields] OR child [All Fields] OR adolescent [All Fields] OR children [All Fields]) AND pulse oximetry [All Fields] AND (accuracy [All Fields] OR validity [All Fields] OR evaluation [All Fields])	337
Scopus	(TITLE-ABS-KEY(Sleep) AND TITLE-ABS-KEY ((infant OR child OR adolescent OR children)) AND TITLE-ABS-KEY (pulse oximetry) AND TITLE-ABS-KEY ((accuracy OR validity OR evaluation)))	213
Web of Science	(((ALL=(sleep)) AND ALL= ((infant OR child OR adolescent OR children)) AND ALL= (pulse oximetry)) AND ALL= ((accuracy OR validity OR evaluation))	120
Cochrane Library	("sleep"):ti,ab,kw AND ("infant" OR "child" OR "adolescent" OR "children"):ti,ab,kw AND ("pulse oximetry"):ti,ab,kw AND ("accuracy" OR" validity" OR "evaluation"):ti,ab,kw	67

Table S3

List of excluded studies with reasons for qualitative synthesis.

N	Excluded studies	Reasons for exclusion
1	R. T. Brouillette, A. Morielli, A. Leimanis, K. A. Waters, R. Luciano, and F. M. Ducharme, "Nocturnal pulse oximetry as an abbreviated testing modality for pediatric obstructive sleep apnea," Pediatrics, vol. 105, no. 2, pp. 405–412, Feb. 2000.	Insufficient information
2	G. Cohen and P. de Chazal, "Automated detection of sleep apnea in infants using minimally invasive sensors.," Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. IEEE Eng. Med. Biol. Soc. Annu. Int. Conf., vol. 2013, pp. 1652–1655, 2013.	Insufficient information
3	G. Cohen and P. de Chazal, "Automated detection of sleep apnea in infants: A multi-modal approach.," Comput. Biol. Med., vol. 63, pp. 118–123, Aug. 2015.	Insufficient information
4	A. M. Coverstone et al., "Overnight pulse oximetry for evaluation of sleep apnea among children with trisomy 21," J. Clin. Sleep Med., vol. 10, no. 12, pp. 1309–1315, 2014.	Incorrect age range (1.75 - 257 months)
5	J. Y. A. Foo, A. P. Bradley, S. J. Wilson, G. R. Williams, C. Dakin, and D. M. Cooper, "Screening of obstructive and central apnoea/hypopnoea in children using variability: a preliminary study.," Acta Paediatr., vol. 95, no. 5, pp. 561–564, May 2006.	Insufficient information

6	H. Kanona, S. Sharma, K. Chaidas, and B. Kotecha, “Pulse oximetry in paediatric obstructive sleep apnoea : is it used appropriately ?,” no. August 2015, pp. 874–881, 2021.	Insufficient information
7	V. M. Lafontaine, F. M. Ducharme, and R. T. Brouillette, “Pulse oximetry: accuracy of methods of interpreting graphic summaries.,” Pediatr. Pulmonol., vol. 21, no. 2, pp. 121–131, Feb. 1996.	Insufficient information
8	D. G. Mason, K. Iyer, P. I. Terrill, S. J. Wilson, and S. Suresh, “Pediatric obstructive sleep apnea assessment using pulse oximetry and dual RIP bands.,” Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. IEEE Eng. Med. Biol. Soc. Annu. Int. Conf., vol. 2010, pp. 6154–6157, 2010.	Insufficient information
9	T. Nao et al., “Prevalence of sleep-disordered breathing in Japanese children: efficiency of screening with nocturnal pulse oximetry,” Sleep Biol. Rhythms, vol. 18, no. 1, pp. 37–47, 2020.	Insufficient information.
10	G. M. Nixon, A. S. Kermack, G. M. Davis, J. J. Manoukian, K. A. Brown, and R. T. Brouillette, “Planning adenotonsillectomy in children with obstructive sleep apnea: the role of overnight oximetry.,” Pediatrics, vol. 113, no. 1 Pt 1, pp. e19-25, Jan. 2004.	Insufficient information.
11	M. Pavone, N. Ullmann, E. Verrillo, G. De Vincentiis, E. Sitzia, and R. Cutrera, “At-home pulse oximetry in children undergoing adenotonsillectomy for obstructive sleep apnea,” Eur. J. Pediatr., vol. 176, no. 4, pp. 493–499, 2017.	Insufficient information.

12	M. S. Urschitz, P. E. Brockmann, M. Schlaud, and C. F. Poets, “Population prevalence of obstructive sleep apnoea in a community of German third graders.,” Eur. Respir. J., vol. 36, no. 3, pp. 556–568, Sep. 2010.	Insufficient information.
13	M. P. Yanney, A. P. Prayle, N. J. Rowbotham, M. Kurc, S. Tilbrook, and N. Ali, “Observational Study of Pulse Transit Time in Children With Sleep Disordered Breathing.,” Front. Neurol., vol. 11, p. 316, 2020.	Insufficient information.
14	M. Zampoli, N. Abousetta, and A. Vanker, “Overnight oximetry as a screening tool for moderate to severe obstructive sleep apnoea in South African children.,” S. Afr. Med. J., vol. 109, no. 1, pp. 23–26, Dec. 2018.	Insufficient information.

Table S4

List of excluded studies with reasons for quantitative synthesis.

N	Excluded studies	Reasons for exclusion
1	D. Álvarez, G. C. Gutierrez-Tobal, M. L. Alonso, J. Teran, F. del Campo, and R. Hornero, "Statistical and nonlinear analysis of oximetry from respiratory polygraphy to assist in the diagnosis of Sleep Apnea in children.," Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. IEEE Eng. Med. Biol. Soc. Annu. Int. Conf., vol. 2014, pp. 1860–1863, 2014.	Incorrect PSG criteria.
2	D. Álvarez et al., "Automated Screening of Children With Obstructive Sleep Apnea Using Nocturnal Oximetry: An Alternative to Respiratory Polygraphy in Unattended Settings.," J. Clin. sleep Med. JCSM Off. Publ. Am. Acad. Sleep Med., vol. 13, no. 5, pp. 693–702, May 2017.	Incorrect PSG criteria.
3	S. E. Brietzke, E. S. Katz, and D. W. Roberson, "Pulse transit time as a screening test for pediatric sleep-related breathing disorders.," Arch. Otolaryngol. Head. Neck Surg., vol. 133, no. 10, pp. 980–984, Oct. 2007.	Pulse oximetry parameter with insufficient studies (less than 4): PTT.
4	W.-S. Chan, E.-T. Chan, D.-K. Ng, K.-L. Kwok, A.-F. Yip, and S.-Y. Leung, "McGill oximetry score to predict risk of obstructive sleep apnea in pediatric	Pulse oximetry parameter with insufficient studies (less than 4): McGill.

	patients," Pediatr. Respirol. Crit. Care Med., vol. 3, no. 2, p. 36, 2019.	
5	L. Chang, J. X. Wu, and L. Cao, "Combination of symptoms and oxygen desaturation index in predicting childhood obstructive sleep apnea," Int. J. Pediatr. Otorhinolaryngol., vol. 77, no. 3, pp. 365–371, 2013.	Incorrect PSG criteria.
6	Crespo A, Álvarez D, Kheirandish-Gozal L, Gutiérrez-Tobal GC, Cerezo-Hernández A, Gozal D, et al. Assessment of oximetry-based statistical classifiers as simplified screening tools in the management of childhood obstructive sleep apnea. Sleep Breath 2018;22:1063–73. https://doi.org/10.1007/s11325-018-1637-3.	Insufficient data.
7	M. Evangelisti et al., "Oximetry in obese children with sleep-disordered breathing.," Sleep Med., vol. 27–28, pp. 86–91, 2016.	Pulse oximetry parameter with insufficient studies (less than 4): McGill.
8	C. M. Hill et al., "Home oximetry to screen for obstructive sleep apnoea in Down syndrome.," Arch. Dis. Child., vol. 103, no. 10, pp. 962–967, 2018.	Incorrect PSG criteria.
9	R. Hornero et al., "Nocturnal Oximetry-based Evaluation of Habitually Snoring Children.," Am. J. Respir. Crit. Care Med., vol. 196, no. 12, pp. 1591–1598, Dec. 2017.	Pulse oximetry parameter with insufficient studies

		(less than 4): Neural network analysis.
10	C. Jonas, S. Thavagnanam, G. Blecher, G. Thambipillay, and A. Y. Teng, "Comparison of nocturnal pulse oximetry with polysomnography in children with sleep disordered breathing.," Sleep Breath., vol. 24, no. 2, pp. 703–707, Jun. 2020.	Pulse oximetry parameter with insufficient studies (less than 4): McGill.
11	V. G. Kirk, S. G. Bohn, W. W. Flemons, and J. E. Remmers, "Comparison of home oximetry monitoring with laboratory polysomnography in children.," Chest, vol. 124, no. 5, pp. 1702–1708, Nov. 2003.	Incorrect PSG criteria.
12	J.-R. Ma, J.-J. Huang, Q. Chen, H.-T. Wu, K.-L. Xiao, and Y.-T. Zhang, "Value of pulse oximetry watch for diagnosing pediatric obstructive sleep apnea/hypopnea syndrome.," Acta Otolaryngol., vol. 138, no. 2, pp. 175–179, Feb. 2018.	Pulse oximetry parameter with insufficient studies (less than 4): ODI4.
13	S. Makhout, A. Boudewyns, K. Van Hoorenbeeck, S. Verhulst, and A. Van Eyck, "Nocturnal pulse oximetry as a possible screening method for obstructive sleep apnea in infants with laryngomalacia," Sleep Med., vol. 90, pp. 91–95, 2022.	Incorrect PSG criteria.
14	J. A. Peña-Zarza, B. Osona-Rodriguez de Torres, J. A. Gil-Sanchez, and J. Figuerola-Mulet, "Utility of the	Pulse oximetry parameter with

	pediatric sleep questionnaire and pulse oximetry as screening tools in pediatric patients with suspected obstructive sleep apnea syndrome.," Sleep Disord., vol. 2012, p. 819035, 2012.	insufficient studies (less than 4): ODI4.
15	A. Polytarchou et al., "Nocturnal oximetry parameters as predictors of sleep apnea severity in resource-limited settings," J. Sleep Res., vol. 32, no. 1, pp. 1–9, 2023.	Pulse oximetry parameter with insufficient studies (less than 4): McGill.
16	F. Trucco, M. Rosenthal, A. Bush, and H.-L. Tan, "The McGill score as a screening test for obstructive sleep disordered breathing in children with co-morbidities," Sleep Med., vol. 68, pp. 173–176, 2020.	Pulse oximetry parameter with insufficient studies (less than 4): McGill.
17	C.-M. Tsai et al., "Usefulness of desaturation index for the assessment of obstructive sleep apnea syndrome in children," Int. J. Pediatr. Otorhinolaryngol., vol. 77, no. 8, p. 1286—1290, 2013.	Pulse oximetry parameter with insufficient studies (less than 4): ODI4.
18	A. Van Eyck et al., "The role of nocturnal pulse oximetry in the screening for obstructive sleep apnea in obese children and adolescents," Sleep Med., vol. 16, no. 11, pp. 1409–1412, 2015.	Incorrect PSG criteria.
19	F. Vaquerizo-Villar et al., "Convolutional Neural Networks to Detect Pediatric Apnea-Hypopnea Events from Oximetry.," Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. IEEE Eng. Med. Biol. Soc. Annu. Int. Conf., vol. 2019, pp. 3555–3558, Jul. 2019.	Pulse oximetry parameter with insufficient studies (less than 4): Neural network analysis.

20	C. T. V Suárez, J. M. F. Turienzo, F. Len, and E. Mansilla, "Pulse oximetry recording in children with adenotonsillar hypertrophy: Usefulness in the diagnosis of obstructive sleep apnea syndrome ," Arch. Argent. Pediatr., vol. 111, no. 3, pp. 196–201, 2013.	Pulse oximetry parameter with insufficient studies (less than 4): Visual analysis.
21	M. P. Villa et al., "Diagnosis of Pediatric Obstructive Sleep Apnea Syndrome in Settings With Limited Resources.," JAMA Otolaryngol. Head Neck Surg., vol. 141, no. 11, pp. 990–996, 2015.	Incorrect PSG criteria.
22	S. Warapongmanupong and A. Preutthipan, "Can standard deviation of overnight pulse oximetry be used to screen childhood obstructive sleep apnea.," Int. J. Pediatr. Otorhinolaryngol., vol. 119, pp. 27–31, 2019.	Incorrect PSG criteria.

PSG polysomnography; PTT pulse transit time.