

An Analysis of the Evidence Underpinning the American Academy Orthopaedic Surgery Pediatrics Clinical Practice Guidelines

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Background

Randomized control trials (RCTs) serve as evidentiary support for recommendations underpinning clinical practice guidelines (CPGs) with the goal of optimizing patient care. A knowledge gap exists within scientific literature when evaluating the quality of RCTs used as evidence in the American Academy of Orthopaedic Surgery (AAOS) pediatric CPGs. We aim to evaluate the reporting quality and risk of bias in RCTs underlying AAOS Pediatric CPG recommendations.

Methods

We located all AAOS Pediatric CPGs. We then extracted all RCTs from the CPG reference sections. All included RCTs were evaluated using Consolidated Standards of Reporting Trials (CONSORT) checklist and Cochrane Collaboration risk of bias assessment tool (RoB 2.0).

Descriptive statistics were recorded and a bivariate analysis was used to account for variance in CONSORT scores. A Mann-Whitney U test was completed to compare CONSORT studies published before and after 2010.

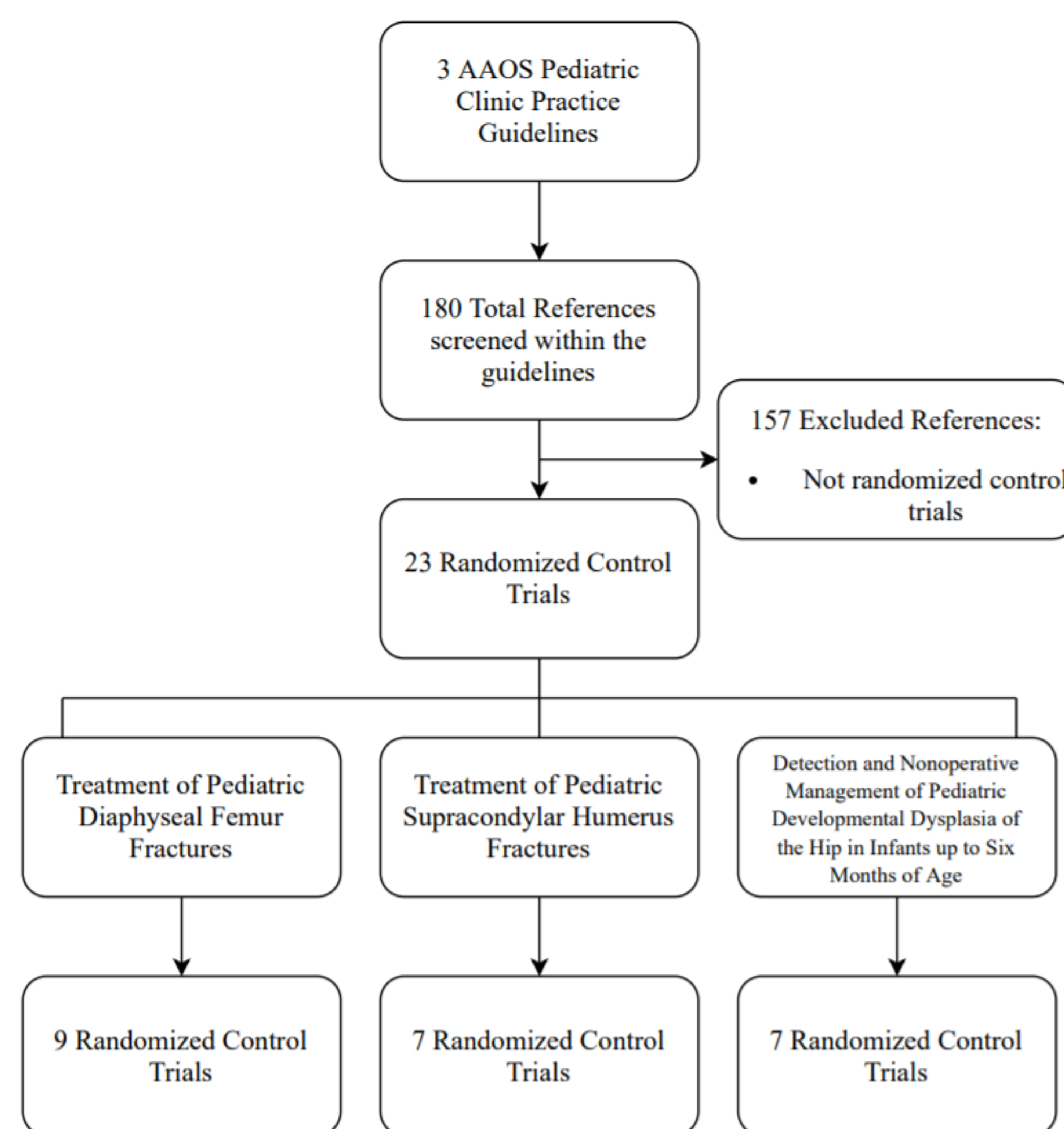


Figure 1: PRISMA diagram for analyzed studies; Step-wise process used to identify RCTs cited in the AAOS Pediatric CPGs

Results

Three CPGs and 23 RCTs met inclusion criteria. Mean CONSORT adherence was 69.8% (21.6/31). The lowest adhered to CONSORT items were 10, 23, and 24 while items 2a, 13a, and 18 displayed the highest adherence. Ten RCTs (43.5%, 10/23) had “low” risk of bias, 5 RCTs (21.7%, 5/23) were of “some concerns,” and 8 RCTs (34.8%, 8/23) received a “high” designation for risk of bias. There were no statistically significant associations in the bivariate regression analysis or Mann-Whitney U test.

Summary

Our results suggest that CONSORT adherence within RCTs used as evidence in AAOS Pediatric CPGs is suboptimal—relying on evidence that, in some cases, is more than 20 years old. Many of the RCTs cited as supporting evidence have “high” risk of bias. Pushing promotion of CONSORT awareness will allow for improvement in quality of reporting and risk of bias. Altogether, these CPGs may need to be updated or expanded to include more recent evidence relevant to pediatric orthopedic surgery.

TABLE 1. Characteristics of Clinical Practice Guidelines

Clinical Practice Guideline	Year of Publication	Geographical Region	References Per Guideline	RCT's Per Guideline	RCT as a Proportion of All Studies Cited by CPG (%)
Detection and Nonoperative Management of Pediatric Developmental Dysplasia of the Hip in Infants up to Six Months of Age	2014	United States	61	7	11.50
Treatment of Pediatric Supracondylar Humerus Fractures	2011	United States	65	7	10.80
Treatment of Pediatric Diaphyseal Femur Fractures	2020	United States	54	9	16.7
Date range	2011-2020	Total	180	23	12.8

CPG indicates clinical practice guideline; RCT, randomized controlled trial.

References

Pediatric Orthopaedic Conditions - Clinical Practice Guidelines (CPGs). Accessed January 7, 2022. <https://www.aaos.org/quality/quality-programs/pediatric-orthopaedic-programs/>

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