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Restricted use of spinal mobilization and manipulation in infants

How serious is the scientific debate?

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Abstract

Introduction: An international taskforce of physiotherapists developed a practice position statement that recommends restricting the use of spinal mobilization and manipulation in infants and children. We analyzed the taskforce's literature search and evaluations regarding adverse events (AEs), efficacy, and indications for a critical approach to these recommendations.
Material and methods: The literature used to inform the decision-making process was assessed for its reliability and relevance. In the case of inconsistencies or suspected misinterpretations the authors of the original publications were contacted. Based on the findings, the recommendations of the taskforce were questioned, followed by a discussion of our own assessments.
Results: The analysis of AEs reveals several inaccuracies and misinterpretations. Furthermore, the discussion is not balanced. The incidence of severe AEs in children remains unclear, severe AEs are rare. The evidence-based statement has not been updated and ignores manual therapy treatments as best practices for postural and movement disorders in infancy. Expert recommendations in Europe include musculoskeletal comorbidities in children with cerebral palsy and proprioceptive musculoskeletal coordination disorders within the therapeutic scope.
Conclusion: The recommendations of the taskforce are based on misinterpretations of the literature and outdated data. Additionally, there are multiple signs of biased reporting and argumentation. Manual therapy techniques, as well as age-appropriate spinal mobilization and manipulation, are integral to the diagnosis and treatment of children of all ages.

Keywords
Adverse events · Infants · Indications · Manipulation · Mobilization

Introduction

In 2019, an independent expert group from Safer Care Victoria recommended the Council of Australia to ban spinal manipulations for general wellness or to manage nonmusculoskeletal conditions in children under 12 years of age [1].

In 2024, an international taskforce, composed of members from the International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) and the International Organisation of Physiotherapists in Paediatrics (IOPTP), developed a position statement on the use of spinal manipulation and mobilization for pediatric populations [2, 3].

Thus, it is not recommended to perform:
– spinal manipulation and mobilization on infants (< 2 years of age),

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- cervical and lumbar spine manipulation on children,
- spinal manipulation and mobilization on infants, children, and adolescents for nonmusculoskeletal pediatric conditions, including asthma, ADHD, autism spectrum disorder, breastfeeding difficulties, cerebral palsy, infantile colic, nocturnal enuresis, and otitis media.

These recommendations were substantiated by literature searches on safety and efficacy of spinal manipulations in children, as well as expert surveys. Evidence-based support for political decision-makers requires due care. This paper questions the taskforce's recommendations and highlights the standards of careful, evidence-based analysis.

Material and methods

Given the importance and impact of the established recommendations, not only the taskforce's statement and the accompanying editorial from the *Journal of Manipulative and Physiological Therapeutics* (JMMT) was analyzed, but also the authors' response on "Spinal Mobilization in Infants Reconsidered" [4] and the cited literature. In two cases of potential misinterpretations of study results [1–6], the first authors [7, 8] were contacted via email.

To provide clarity, we divide our results into three sections, discussing them in the same context:

- Analysis of the literature regarding adverse events (AEs).
- Analysis of the literature regarding efficacy and best practice.
- Indications for spinal mobilization and manipulation in infants.

The use of populist narratives by the authors is reviewed due to the controversial nature of the topic and public interest and is considered in the detailed discussion.

Abbreviations

ADHD	Attention deficit hyperactivity disorder
AEs	Adverse events
CMT	Congenital muscular torticollis
ESSOMM	European Scientific Society of Manual Medicine
IFOMPT	International Federation of Orthopaedic Manipulative Physical Therapists
IOPTP	International Organisation of Physiotherapists in Paediatrics
KiSS	Kinematic imbalance due to suboccipital strain
RCT	Randomized controlled trial

Results and discussion

Adverse events (AEs)

The overview largely adopted by the taskforce from Safer Care Victoria (SCV) [1, 2, 6] identified 159 reports of moderate and severe AEs. Of these, 137 (86%!) were from 1 research (and therapist) group that documented physiological phenomena associated with high cervical manipulations in infants in quasi-experimental studies [7, 8]. The observed transient regulatory phenomena (especially respiratory arrest < 10 s and heart rate decrease) were categorized by the taskforce as life-threatening and as red flags for apnea and bradycardia [3, 4]. On inquiry, the first author of the original publication, Koch [7, 8], clarified via email that the classification of these phenomena as AEs is a significant misinterpretation of the study's findings. According to the authors (including leading experts in neurophysiology and forensic medicine), these are benign physiological responses to stimulation and should not be considered AEs [9]. Comparable reactions, especially in premature infants, can occur spontaneously and have no pathological significance [10]. As the infant regulatory system matures, these occurrences decrease. Koch et al. [7, 8] made the same observations. It should be noted that respiratory arrests, as defined, cannot be classified as apnea (definition: > 15 s) [10]. Concluding that a brief, reflexive heart rate decrease (max. < 25 s) indicates bradycardia (< 100/min), even if the authors describe it this way, is scientifically incorrect, as no quantitative heart rate data were reported. Therefore, the classification as a moderate AE [1, 5, 6] is incorrect. Because of the lack of a control group, the reactions cannot be viewed as specific consequences of spinal manipulation[1]. Consistent scientific evaluation principles apply to all publications.

The described vegetative responses can be easily avoided in clinical practice by increasing vigilance and the activity level of the infants. In the practical work we conducted, such vegetative reactions were not observed.

Another misinterpretation is the attribution of a death under Vojta therapy as an AE of spinal manipulation [11]. The manual forced positioning of the head of a 3-month-old infant during physical therapy leading to a brainstem hemorrhage was incorrectly classified as a chiropractic AE. This misclassification occurred because the therapy is performed with the hands. The motivations for categorizing this incident as a manual therapy AE can only be speculated upon.

Based on these flawed data, the SCV authors [1, 6] calculated a complication rate for cerebrovascular incidents related to spinal manipulation of 1:20,000. It is not clear how the authors calculated this. We can only guess that cases from selected studies on AE in spinal mobilization and manipulation were aggregated, leading to an overestimation of complications. This approach violates basic principles of serious reporting of AEs in children and demonstrates how biased the discussion has become.

Similar concerns apply to the evaluation of AEs in children by the taskforce experts from IFOMPT and IOPTP [2]. When analyzing and correcting the reports of severe AEs in children under 8 years from Vohra et al. [12] and Milne et al. [5], we find 4 tragic cases of severe incidents (1 infant with astrocytoma, 2 children with neck fractures and dislocations, one fatality and 1 child with severe neurological complications) [13–15] in the last 60 years. In all cases, either underlying conditions were overlooked or incorrect techniques were used. Serious risk assessments for medical treatments must be based on incidence data, which the authors [1, 5] neither ex-

[1] We had the opportunity to analyze exemplary film sequences from the investigations at the time [7]. The vegetative reactions of the surprised infant are similar to those that we know as non-specific vagal reaction.

trapolated nor estimated. Furthermore, it is unclear why the taskforce even cites studies in which AEs occurred in the control group [5].

The detailed analysis of incidences for AE in manual treatment of children is reserved for a separate publication. An Australian-led team also analyzed the risk of therapies using high velocity, low amplitude thrust techniques on babies with congenital muscular torticollis, including postural torticollis, in their systematic review published in 2025. Based on RCT level evidence, no recommendation could be derived against infant-adapted upper cervical manipulation in a carefully selected population with postural torticollis [16].

Another argument made by the authors concerns indirect AEs due to delays in the diagnosis of underlying conditions by specialists using manual treatments for infants and children [2, 3]. After all, this applies to all therapeutic specialties. Diagnosing and treating children requires specific neurological, pediatric orthopedic, developmental pediatric and social medical knowledge, skills and competencies. Access to differential diagnostic testing should also be ensured. Ensuring this in the context of training and continuing education is the responsibility of professional organizations and, where applicable, policymakers. Advising against using therapeutic procedures in this context is both unprofessional and shows a lack of respect for the work of other specialists.

It should be noted that manual diagnostic and treatment techniques have been crucial in the early identification of serious underlying conditions in children [17–19]. A balanced assessment must take this into account.

The taskforce advises against any spinal mobilization and manipulation in children under 2 years of age (including in pediatric orthopedic therapy planning), recommending as an alternative, for example, stretching of the sternocleidomastoid muscle in infants with compartment syndrome [2]; however, this therapy often leads to unintended mobilization effects on the cervical spine, with biomechanical effects that exceed those of mobilization or manipulations in terms of force and duration, an issue the authors seem unaware of [20]. The risks of this technique are also unclear. On the other hand, this technique is only used in congenital muscular torticollis (CMT) and therefore not an alternative. Most infants with postural and movement asymmetries do not have CMT. Parent-infant, child-based play and positioning training [21] is also not an alternative but a basic therapy before or in combination with other methods.

Benefit and efficacy

Based on their literature review, the taskforce concludes that there is insufficient evidence for the therapeutic benefits of spinal mobilization and manipulation in infants [2–5]. They also reject the notion that the absence of research evidence does not equate to evidence of absence and denial of care [3]. The taskforce ignored at least two double-blind RCTs that demonstrated the benefit of spinal mobilization and manipulation in infants. Both a monocentric RCT [22] ($N = 72$) and a multicenter RCT [23] ($N = 171$) showed the significant superiority of a single spinal manual therapy session combined with a home exercise program over a home exercise program alone for infants with postural and movement disorders.

According to the European core curriculum of ESSOMM, a union of 17 European societies from 11 countries, the multicenter RCT was rated as "an example of good-quality studies (level Ib)" [24]. The examination score meets the criteria of the COSMIN recommendation [25] for the validation of clinical studies [26].

Indications for spinal mobilization and manipulation

We believe that the primary indication for using these techniques is segmental reversible dysfunction. The key symptom is movement impairment. Differential diagnostic considerations should always include a variety of neurological and orthopedic underlying conditions as potential causes. The main indication in infants is the postural and movement asymmetry with restricted cervical mobility due to segmental reversible dysfunction of the craniovertebral junction (kinematic imbalance due to suboccipital strain, KiSS) [27]. Neurophysiological foundations [28] serve, contrary to the taskforce's view, to understand the pathophysiology of this musculoskeletal coordination disorder. According to current studies, the therapeutic approach with a single manual medicine intervention reaches the highest evidence level (Ib, IIa) as best practice for this indication [22, 23]. Long-term effects of any therapeutic approach remain unexamined. Despite correspondence with one of the leading authors of the taskforce statement in August 2023, the taskforce seemed unable to update or at least contextualize their statements.

A second indication for spinal mobilization and manipulation techniques in infants arises in the context of cerebral palsy. While this does not provide a causal therapy approach, it affects the bottom-up and top-down regulation mechanisms for proprioception and muscle tone [29–31].

Finally, a few brief comments about style and care in medical publications are called for. Of course, science is contentious and the discussion is often controversial; however, describing therapeutic methods used worldwide as "madness" [3], exaggerating one's own viewpoints, or not working scientifically in an open-ended manner [32] violates the principles of journalistic-scientific discourse. Given the public and political debate surrounding the manual treatment of infants and children in Australia, a certain degree of respect and self-relativization is appropriate. Consciously concealing recent study results that contradict your own opinion is disrespectful to the reader.

Conclusion

The recommendations of the IFOMPT and IOPTP taskforce to avoid spinal mobilization or manipulation treatments for infants and children are based on misinterpretations of published AEs and insufficient updates to the current literature. All four cases of severe AEs in children under 8 years were related to either incorrect diagnoses or the application of incorrect techniques. Treatment of postural and movement asymmetries in infancy based on spinal dysfunction (KiSS) with spinal mobilization and/or manipulation remains best practice at present. Chiropractic treatment for spinal movement re-

strictions in children with cerebral palsy should also be considered.

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Data Availability. The data supporting the results of this study are available on request from the corresponding author (RS).

Declarations

Conflict of interest. R. Sacher, E. Saedt and M. Wuttke declare that they have no competing interests.

All procedures performed in studies involving human participants or on human tissue were in accordance with the ethical standards of the institutional and/or national research committee and with the 1975 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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