



THE IMPACT OF FAMILY-CENTERED CARE ON MOTOR FUNCTION IN PRETERM INFANTS: A SYSTEMATIC REVIEW



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OVERVIEW

- Objectives
- Background
- Purpose
- Methods
- Results
- Conclusions
- Clinical Relevance
- Limitations
- Areas for Future Research



OBJECTIVES

- By the end of this presentation, participants will:
 - *Understand* the components and benefits of family-centered care
 - *Recognize* the importance of integrating this approach into a physical therapy plan of care for the pediatric population
 - *Identify* appropriate outcome measures to assess improvements in the motor performance of preterm infants



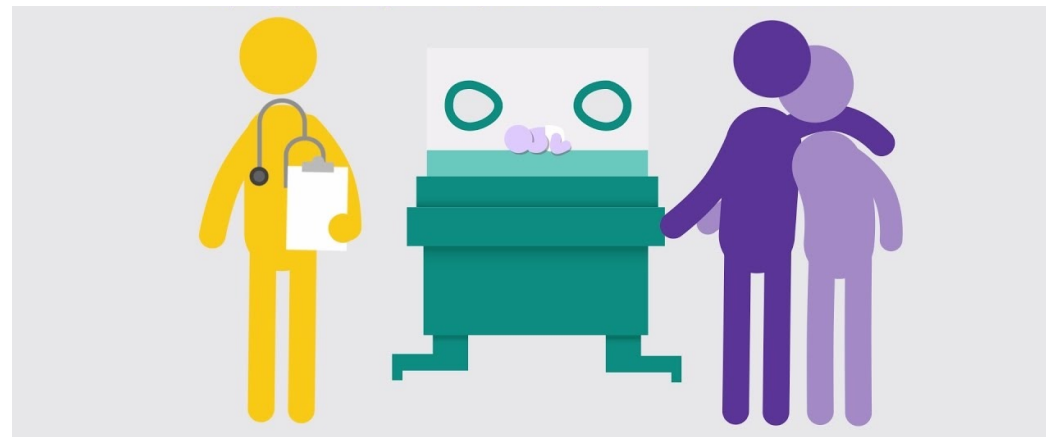
BACKGROUND

- Family-centered care: an approach to healthcare decision-making involving the patient, the family, and the health care provider¹
 - Promotes a relationship in which family members and professionals work together to ensure the best services for the child and family²
 - Recognizes that negotiation is essential in a collaborative relationship and puts mutual commitment of all parties at the forefront²



BACKGROUND

- Family-centered care is considered the standard of pediatric health care by many clinical practices, hospitals, and health care groups.¹
- However, despite widespread endorsement, it continues to be insufficiently implemented into clinical practice.¹



<https://www.youtube.com/watch?v=vJSPjkwlpR0>



BACKGROUND

- Preterm infants defined as those born before 37 weeks of gestation: late preterm (32-37 weeks), very preterm (28-32 weeks), or extremely preterm (<28 weeks).³
- Preterm infants are at greater risk for both short and long-term health problems, including serious breathing problems, feeding problems, visual and hearing impairments, learning difficulties, as well as developmental delays.^{4,5}



BACKGROUND

- Physical therapy interventions include positioning, holding, carrying, and postural interventions, which can help premature infants reach their full potential developmentally.⁵
- Collaboration from parents during therapy can not only help the child, but also allow parents to engage more with their infant and have a more realistic view of the child's impairments.⁶



BACKGROUND

- A physical therapy session involves working with the preterm infant on developing strength, addressing muscle and joint dysfunction, and working toward achieving developmental milestones.⁵
- Family centered care and parent education of the physical therapy plan of care are becoming primary components of the early intervention process to promote proper development and milestone achievement in infants.⁷



PURPOSE

- The purpose of this study was to evaluate the current literature on the effectiveness of family-centered care on motor performance in preterm infants compared to standard care.



<https://therapyandwellnessconnection.com/insights/infant-physical-therapy-what-you-need-to-know/>



METHODS

- Databases
 - CINAHL (EBSCO)
 - Proquest Health and Medical Collection
 - Pubmed MedLine
 - Wiley Online Library



METHODS

- Search Terms
 - (“parent-administered” OR “family-centered” OR “parent education” OR “home based”) AND (“physical therapy” OR “exercise”) AND (“preterm infants” OR “premature infants”)



METHODS

- Search Limits
 - English
 - Journals
 - Human subjects
 - 2012-2022



<https://www.birthinjuryguide.org/treatments/pediatric-physical-therapy/>



METHODS

- Methodological Quality:
 - Two independent reviewers
 - Oxford Center for Evidence Based Medicine 2011 Levels of Evidence (OCEBM)

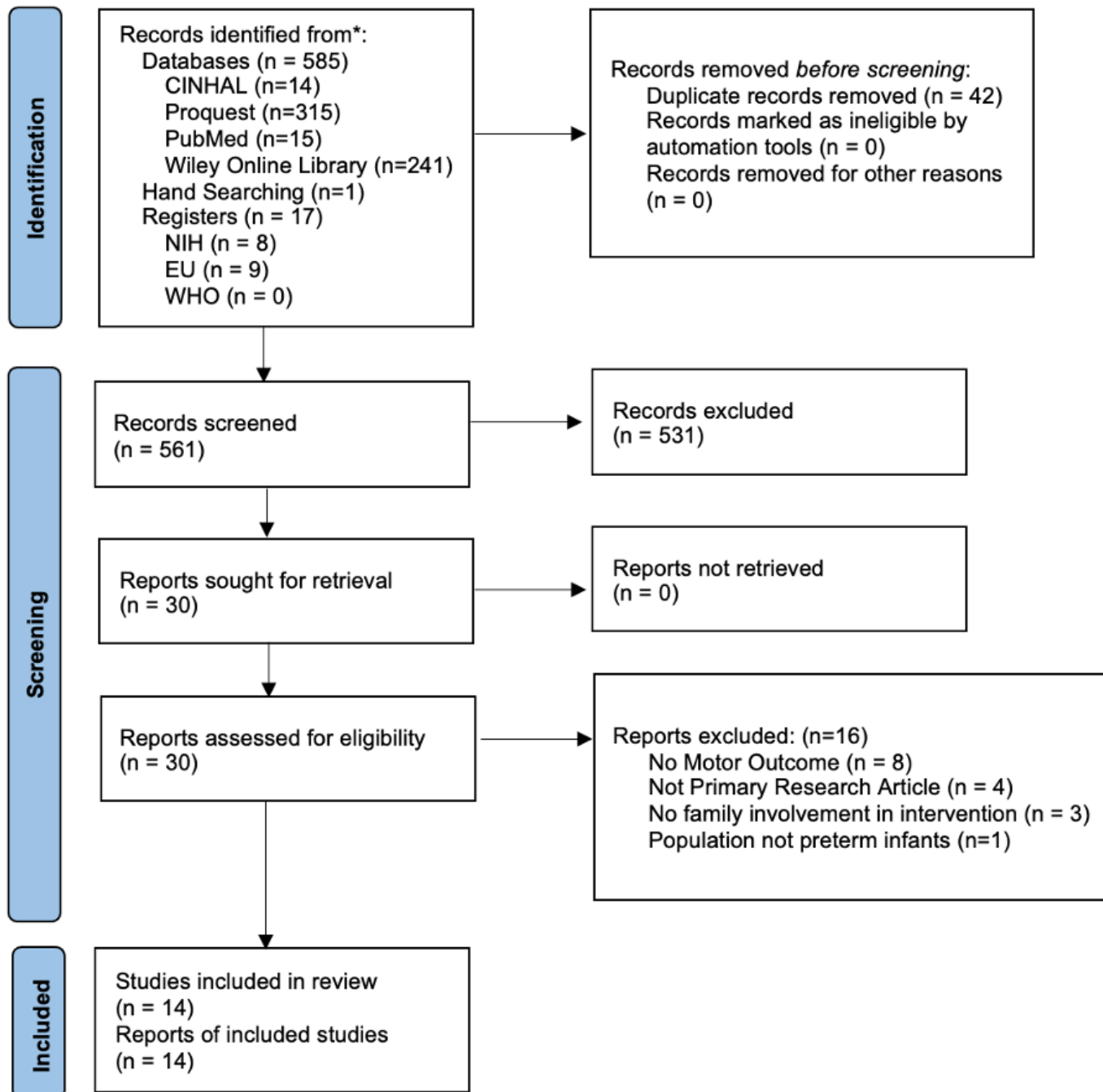


METHODS

- Selection Criteria:
 - Preterm infants born less than 37 weeks
 - No specific gender or diagnosis
 - Intervention that included the parents in any setting



Identification of studies via databases and registers



RESULTS



- Total Articles Screened: 561
- Articles Meeting Selection Criteria: 14
- OCEBM levels: II-III
- Sample Sizes: 16-251 infants
- Age Range: 32 weeks postmenstrual age to 18 months corrected age
- Treatment Duration: Sessions ranged from 10-60 minutes for 1-14 times per week
- Follow Up: 3 weeks to 1 year post intervention



RESULTS

- Statistically significant improvements were found in 12 of the 14 studies
 - Between group differences: 11 studies
 - Within group differences: 1 study



<u>Study Name</u>	<u>OCEBM Level</u>	<u>Intervention</u>	<u>Outcome Measure(s)</u>	<u>Key Findings⁺</u>
Sgandurra et al. ⁸ (2016)	Level 3	CareToy System	IMP AIMS	<ul style="list-style-type: none"> •Intervention > Control on IMP by 2.7 points •Intervention > Control AIMS by 2.2 points
Sgandurra et al. ⁹ (2017)	Level 2	CareToy System	IMP AIMS	<ul style="list-style-type: none"> •Intervention > Control on IMP by 1.7 points •Intervention > Control on AIMS by 0.9 points
Ustad et al. ¹⁰ (2016)	Level 2	Postural control with picture booklet	TIMP	<ul style="list-style-type: none"> •Intervention > Control by 3.3 points
Ochandorena-Acha et al. ¹¹ (2022)	Level 2	Positioning, prone play, object exploration	ASQ-3	<ul style="list-style-type: none"> •Control > Intervention on Fine Motor Scale of ASQ-3 by 10.6 points
Øberg et al. ¹² (2020)	Level 2	Postural Control	TIMP	<ul style="list-style-type: none"> •Intervention > Control but no change values provided.
Yu et al. ¹³ (2019)	Level 2	Family-Centered Intervention Program (FCIP)	Neonatal Neurobehavioral Examination	<ul style="list-style-type: none"> •Intervention > Control on tone and motor patterns scale by 0.7 points

⁺Key findings represent the amount of change between groups from initial examination to final examination

<u>Study Name</u>	<u>OCEBM Level</u>	<u>Intervention</u>	<u>Outcome Measure(s)</u>	<u>Key Findings⁺</u>
Yu et al. ¹⁴ (2017)	Level 2	Family-Centered Intervention Program (FCIP)	Neonatal Neurobehavioral Examination	•Intervention > Control on tone and motor patterns scale by 0.7 points
Flierman et al. ¹⁵ (2016)	Level 3	ToP Program	BSID-III	•Intervention > Control on BSID-III by 6.7 points
Cioni et al. ¹⁶ (2017)	Level 2	CareToy System	IMP AIMS	•Intervention > Control on IMP by 1.7 points •Intervention > Control on AIMS by .9 points
Finlayson et al. ¹⁷ (2020)	Level 3	SPEEDI	TIMP	•Intervention > Control by .78 points on BSID
Akhbari et al. ¹⁸ (2021)	Level 2	COPCA	IMP	•Intervention > Control by 4 points
Elbasan et al. ¹⁹ (2017)	Level 3	NDT Principles	BSID-III	•Control > Intervention by .9 points*

*Control improved by a greater value than the intervention group but the intervention performed better overall than the control group based on scores on BSID-III.

RESULTS

- Improvements on motor outcomes included the following:
 - 4.8 - 5.2 points on the Alberta Infant Motor Scale (AIMS) after 4 weeks of intervention
 - 5.5 - 18.0 points over the course of 4 weeks - 18 months on the Infant Motor Profile (IMP)
 - 26.4 points after 3 weeks of intervention on the Test of Infant Motor Performance (TIMP)
 - 11.6 points after 12 months of intervention on the motor domain of the Bayley Scale of Infant Development (BSID-III)
 - Fine motor skills on the Ages and Stages Questionnaire (ASQ-3) improved by 2 points over 8 months



CONCLUSIONS

- Skilled physical therapy interventions involving family-centered care leads to improved motor performance in preterm infants.
- Interventions varied between 10-60 minutes in duration, with the number of weekly sessions ranging from 1 to 14.
- Motor performance has been assessed using various outcome measures in recent research.



CLINICAL RELEVANCE

- Based on the studies analyzed in this systematic review, clinically relevant improvements were reported on multiple motor outcomes.
- Parent involvement is a critical component of physical therapy interventions for premature infants.
 - Those in the intervention groups that received family-centered care had overall better motor performance outcomes compared to standard care.



CLINICAL RELEVANCE

- Early parent education focused on home-based exercises, such as positioning and toy-based activities completed for a minimum of 10 minutes twice a day over 3 weeks, can improve motor development for premature infants.
- These improvements can be assessed using objective outcome measures such as the TIMP, IMP, AIMS, ASQ-3 and BSID-III.



LIMITATIONS

- Varied sample size
- Varied outcome measures used
- Interventions inconsistent between studies
- Short intervention duration
- Lack of follow-up
- Variable parental compliance
- Lack of blinding of subjects and therapists



<https://www.philanthropy.com/article/my-brothers-troubling-story-shows-why-philanthropy-should-avoid-investing-in-institutional-care>



AREAS FOR FUTURE RESEARCH

- Utilizing larger sample sizes
- Investigating optimal time frame, intervention parameters, and outcome measure recommendations
- Determining the effect of family-centered care on other aspects of childhood development as well as in other pediatric populations



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Questions?

