



Relationship of rehabilitation and community services to gross motor, self-care, and participation in young children with cerebral palsy

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I will not discuss off label use and/or investigational use in my presentation.

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Background

- Rehabilitation program decisions are very important for families and society
- Therapy services are complex in children with CP
- Therapy intensity: current literature suggests mixed evidence (Arpino et al, 2010; Christiansen, 2008; Majnemer et al 2013; Ustad et al. 2009; Weindling et al, 2007; Yabunaka et al, 2011)
- Therapy focus: minimal to no literature on how to focus complex services (Palisano et al, 2012)

Services to Outcomes

Objective:

 Determine variance in gross motor (GM), selfcare (SC) & participation (PAR) in home and community life in young children with CP explained by rehabilitation and community service variables

Hypotheses:

- Intensity would explain minimal variance in outcomes
- *Focus* of rehabilitation services would explain moderate variance in outcomes

Design & Sample

2° Aim of Move & PLAY: Prospective cohort study Sample:

- 389 children with CP (216 males [56%])
- Mean age 3 years 2 months, SD 11.5 months
 - 18-30 mon = 114; 31-42 mon = 124; 43-60 mon = 149
- GMFCS Levels
 - I = 145; II = 45; III = 49, IV = 65, V = 83; 2 missing
- Multiple sites across Canada and the US
 - United States = 256
 - Pennsylvania, Georgia, Oklahoma, Washington
 - Canada = 131
 - British Columbia, Saskatchewan, Manitoba, Ontario, Nova Scotia, and Newfoundland and Labrador
 - 2 missing
- Parents participating: 92% mothers

Move & PLAY Conceptual Model & Methods

(Bartlett et al. 2010; Chiarello et al. 2011)

Data at entry



GMFM-66 B&C (Brunton & Bartlett, 2011)

Data at entry and 12 months post-entry (Retention rate: 90%)

Child Engagement in Daily Life (Chiarello et al., in review)

Data at 6 months post-entry

Services Questionnaire

Parents reported their children's services:

- Intensity
 - Minutes of teacher, physical therapist (PT), occupational therapist (OT), speech therapist (ST), # of community recreation programs
 - Extent that programs/services met the children's and families' needs
- Focus of PT/OT
 - Primary & secondary impairments, activity, environment, selfcare, play
- Aspects of family-centered care

Descriptive results:

Palisano et al. (2012) Amount and focus of physical therapy and occupational therapy for young children with cerebral palsy. *Physical and Occupational Therapy in Pediatrics*, 32(4):368-82.

Statistical Analysis

Stepwise multiple linear regression

- without controlling for functional (GMFCS) levels,
- performed with variables that had significant bivariate relationships (p < 0.05) with the end of study GM, SC, and PAR scores,
- excluded variables with multicolinearity (r ≥ 0.80).

Results

- Significant bivariate correlations obtained for
 5 intensity variables for each outcome
- Combinations of 6 PT/OT focus variables for each outcome
- Intensity: # of community programs; Teacher, OT, PT, ST minutes per year
- Focus: 1° impairments, 2° impairments,
 Activity, Environment, Self-care, Play
 - Extent: 0=not sure, 1=not at all...5=very great extent

Results

	Outcome	% variance accounted for
Intensity ->	GM	11
	SC	15
Final model	PAR	15

Outcome	Intensity variable	Standardized β
GM	# community programs ST service time PT service time	0.20 -0.15 -0.17
SC	<pre># community programs Teacher service time PT service time ST service time</pre>	0.23 -0.12 -0.14 -0.17
PAR	# community programs	0.31

Results

			Outcome	e % variance accounted for		
■ PT/OT focus →		GM	25			
		SC	26			
		PAR	3			
Final model						
	Outcome	Intensity	variable	Standardized B		
	GM	Activity Self-care Environment		0.27		
				-0.51		
	SC	Activity		0.30		
	Self-care			0.30		
Secondary		' Impair	0.12			
		Play		-0.26		
		Environme	ent	-0.40		
	PAR	Activity		0.17		

Clinical Implications

- Small amounts of variance in outcomes accounted for by service intensity
 - Greater participation in community programs with higher GM/SC/PAR
 - Greater participation in children with lower GMFCS levels
 - Higher intensity services with lower GM/SC
 - Higher intensity in children with higher GMFCS levels
- Optimize children's participation in community programs
- Additional research for determination of appropriate intensities of therapy services are warranted.

Clinical Implications

- Providing an activity, self-care, secondary impairments focus within therapy should be considered for young children with CP.
- Higher focus on environmental adaptations associated with lower GM and SC
 - Likely associated with appropriate greater environmental focus for children with high GMFCS levels
- Higher focus on play associated with lower SC
 - Possibly higher focus on play as perhaps expectations for independent self-care were lower

Limitations

Observational study – caution re: cause/effect
 Services reported by parents

- Sub-study: no significant correlations between therapist and parent for focus & extent of PT/OT services and differences on 5 out 7 ratings (Fiss et al, 2012)
- Quality of services unknown
- Further analysis needed by functional abilities
 - GMFCS level I/II and III/IV/V

Thanks and Questions



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