

Time Will Tell?

Symptom Clusters, Physical Activity, & Quality of Life Over Maintenance Therapy in Children with Acute Lymphocytic Leukemia

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How did study concept start?

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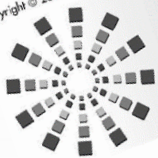
Original Article

Symptom Trajectories in Children Receiving Treatment for Leukemia: A Latent Class Growth Analysis With Multitrajectory Modeling



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Physical Activity, the Childhood Cancer Symptom Cluster—Leukemia, and Cognitive Function
A Longitudinal Mediation Analysis

Childhood Cancer Symptom Cluster: Leukemia and Health-Related Quality of Life

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Symptom Clusters

- Symptoms occur concurrently – rarely in isolation
- In children & teens with ALL - fatigue, sleep disturbances, & depression have been shown to cluster (Hockenberry et al., 2011)
- Multiple ways to analyze symptom clusters



Latent Class Analysis

- An example of a person-centered approach is the use of latent class analysis (LCA);
- LCA uses a categorical approach to classify people into groups whose symptom experience is similar (Conley, 2017)





Physical Activity

- PA – any body movement other than resting
 - Exercise: a subset of PA; is planned, structured, and repetitive
- Skeletal muscle movements of PA are characterized in a child's play behaviors
- In children & teens with cancer, exercise and PA had a positive impact on fatigue, sleep, quality of life, physical functioning, as well as cognitive function (Baumann et al., 2013; Götte et al., 2014)



Quality of Life

- Cancer symptom severity negatively impacts a child's QOL.
- In primary study, children with more severe symptoms over the first year of treatment had significantly lower QOL at the beginning of maintenance therapy (Rodgers et al., 2018)



Study Aims

- To examine changes in symptoms and QOL during ALL maintenance in children grouped by symptom cluster
- To explore the influence of PA and symptoms on QOL.



Methods

- Setting
 - Texas Children's Hospital /Baylor College of Medicine
 - Children's Minnesota
- Eligibility for this companion study
 - Children ages 3 to 18 when started primary study
 - Without CNS radiation
 - Approaching last cycle of maintenance therapy
 - Spoke English or Spanish
- Two Timepoints
 - BOM: Beginning of maintenance (data from primary study)
 - EOM: Last cycle of maintenance



Methods: Self-report measures

Symptom Measures	Report
Fatigue: (Hockenberry/Hinds Scales) CFS – 10 items FSA – 14 items PFS – 17 items	Ages 7 – 12 Ages 13 to 18 Parents ages 3 to 6
Sleep: Adolescent Sleep Wake Scale – 28 item Child Sleep Wake Scale – 24 items	Ages 13 to 18 Ages 7 – 12 & Parents ages 3 to 6
Depression : CDI – 2 27 items (BOM) PROMIS – Pediatric Depression (EOM)	Ages 7 to 18 Parents ages 3 to 6

Functional Measures	Report
Physical Activity: Godin Leisure Scale	Ages 7 to 18 Parents ages 3 to 6
QOL: PedsQL Cancer Module	Ages 7 to 18 Parents ages 3 to 6



Latent Class Analysis

- Categorized children into symptom cluster groups (low and high)
- Group assignment based on measurements of fatigue, sleep disturbance, and depression taken at the beginning of maintenance therapy.



Sample N = 42

Characteristic		Whole group N = 42	Low group N = 34	High group N = 8
Age	Young Child (3 - 6 years)	20 (48%)	17 (50%)	3 (37%)
	Child (7 - 12 Years)	19 (45%)	15 (44%)	4 (50%)
	Adolescent (13 - 18 Years)	3 (7%)	2 (6%)	1 (13%)
Sex	Female	22 (52%)	18 (53%)	4 (50%)
	Male	20 (48%)	16 (47%)	4 (50%)
Race/ Ethnicity	Hispanic	16 (38%)	13 (38%)	3 (38%)
	Non-Hispanic White	15 (36%)	13 (38%)	2 (25%)
	Non-Hispanic Black	3 (7%)	3 (9%)	0 (0%)
	Non-Hispanic Other	8 (19%)	5 (15%)	3 (38%)



Results: Symptoms

- Significant difference in symptoms between low and high group at BOM ($p < .01$) but also at EOM ($p < .01$)
- Individual symptom levels did not change significantly from BOM to EOM for low group
- Individual symptom levels did not change significantly from BOM to EOM for high group
- Time (1.9 years) did not improve symptom distress



Results: PA & QOL

PA

- Low symptom group was more active than high symptom group but not significant
- Low symptom group trended towards an increase in PA during maintenance; high symptom group remained the same

QOL

- Low symptom group had significantly better QOL than high symptom group at BOM & EOM
- QOL trended towards improvement in both symptom groups during maintenance but not significant



Results: Symptoms, PA, QOL

- When grouped by PA, children with active PA (n = 24) at BOM had significantly better sleep at EOM ($p = .03$)
- When grouped by PA and symptoms at BOM:
 - Low symptom, normally active children (n = 21) had significantly better QOL at EOM ($p < .01$), than the high symptom, normally active group (n = 3) and the high symptom, inactive group (n = 4)



Discussion

- Health care providers may assume symptoms will resolve on their own when therapy is less intensive.
- For children with high symptoms, this does not appear to be the case.
- High symptom group had persistent fatigue and poor quality sleep at the EOM
- PA positively influences sleep
- When active PA and low symptoms analyzed together → better QOL



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Questions?

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