THE IMPACT OF CHILDHOOD ACTIVITY LIMITATIONS ON PARENTAL HEALTH, MENTAL HEALTH AND WORKDAYS LOST
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- (1 K01 HD049533-01, Principal Investigator W.P. Witt)
- (P30HD03352, Principal Investigator M.M. Seltzer)
Overview

- Background and Significance
- Aim and Hypotheses
- Methods
- Results
- Conclusions
- Next Steps
GENERAL BACKGROUND AND SIGNIFICANCE
Prevalence of childhood chronic conditions has substantially increased due to treatment advances, improved survival, and the emergence of new childhood conditions.
Trends In Prevalence Of Disability Due To Asthma And Other Conditions Among US Children, NHIS
Children's Genetic, Social, and Behavioral Environment for Some Chronic Health Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Genetic</th>
<th>Breastfeeding and Birth Weight</th>
<th>Diet</th>
<th>Television/Media</th>
<th>Exercise</th>
<th>Other Environmental Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>Family obesity highly associated with child and adolescent obesity</td>
<td>Breastfeeding associated with lower rates of obesity Very low and high birth weights risk for obesity</td>
<td>Dietary changes: portion size, sugar-sweetened beverages, increased fast food consumption</td>
<td>Association of television use and obesity (inactivity and impact of food advertising on energy intake)</td>
<td>More sedentary behaviors associated with increased obesity Moderate and vigorous activity is protective</td>
<td>Decreased opportunity for community and school-based exercise Increased indoor time Increasing unhealthy food environments Maternal smoking risk for obesity</td>
</tr>
<tr>
<td>Asthma</td>
<td>Genes associated with allergic response Familial asthma</td>
<td>Very low birth weight associated with higher rates of early wheeze and asthma Breastfeeding associated with reduced asthma risk</td>
<td>Dietary components (certain fatty acids) increase risk Obesity increases risk</td>
<td>Increased indoor exposure to allergens and pollutants Increases in obesity risk for asthma</td>
<td>Regular exercise improves lung function</td>
<td>Maternal smoking Allergen exposure Immunizations “Hygiene hypothesis” Infestations Neighborhood disadvantage increases environmental risks</td>
</tr>
<tr>
<td>ADHD</td>
<td>Dopamine transporters Transmission in families</td>
<td>Very low birth weight increases risk for ADHD</td>
<td>NA</td>
<td>Television exposure a risk</td>
<td>NA</td>
<td>Increasing parent absence Demands on parent time Maternal smoking and alcohol use risk for ADHD</td>
</tr>
</tbody>
</table>

Abbreviations: ADHD, attention-deficit/hyperactivity disorder; NA, not applicable.

New Focus on QOL and Family Burden

- Focus has shifted from simple survival to improving quality of life
- Growing interest in both the family factors that influence child health
- AND
- How child health impact the family
  - Including parental outcomes
  - Financial burden
Significance

- Social and ecological context of the family is important for understanding and improving child health
- Child health can both affect family outcomes and be affected by the family
- Family can potentially be a resource and/or have a negative impact on child health
Social Disparities in Health

- Prevalence often varies by sociodemographic factors.
- Chronic conditions disproportionately affects disadvantaged populations.
- Sociodemographic disparities in health may be mediated by stressful life events or poor family functioning.

Source: WHO, 2002
STUDY SPECIFIC BACKGROUND
Background--Definitions

- "Categorical" or "disease-specific" approach to defining childhood illness has been called into question

- Term *activity limitation*
  - refers more generally to the physical, social, behavioral, and cognitive limitations that alter a child’s ability to engage in age-appropriate roles
  - regardless of a child’s specific medical conditions or diagnoses
Conceptual Model of the Impact of Child Health Status on Parental Quality of Life and Well-Being

Child Health Status

Parental Role Function

Parental Stress

Chronic Stress
- Symptoms of Stress
- Perceived Stress

Parental Adaptation /Coping

Parental Quality of Life and Well-Being
- Physical Health
- Mental Health

Witt, Litzelman, et al. (2010, under review)
Background

- Childhood activity limitations can place tremendous burdens on the family
  - Physical
  - Financial
  - Time
  - Psychological

- May present substantial additional risk for adverse parental health, mental health, and work-related outcomes
Summary of Previous Research

- Higher prevalence
  - Psychological distress
  - Poor health

- Parents of children with limitations report
  - Reductions in work attendance
  - Reductions in workforce participation
Limitations of Existing Research

- Conducted on convenience samples or in families that are receiving health care services

- Previous national studies examining the impact of childhood activity limitations are cross-sectional
Significance

- Improving family health outcomes
- Reducing health disparities between families with and without children with activity limitations
AIMS AND HYPOTHESES
Aim of the Present Study

- Determine if and to what extent the onset and persistence of childhood activity limitations resulted in adverse:
  - Health outcomes
  - Mental health outcomes
  - Work attendance outcomes
Hypotheses

- Parents of children with limitations would have worse physical and mental health outcomes and more workdays lost than parents of children without limitations
  - Parents of children with ongoing limitations would be most impacted by their child’s limitations
METHODS
Data Source

- Ten panels of the 1996-2005 Medical Expenditure Panel Survey (MEPS)

  Household survey of the civilian non-institutionalized US population
Medical Expenditure Panel Survey

- Annual Survey of 15,000 households: provides national estimates of health care use, expenditures, insurance coverage, sources of payment, access to care and health care quality

- Permits studies of:
  - Distribution of expenditures and sources of payment
  - Role of demographics, family structure, insurance
  - Expenditures for specific conditions
  - Trends over time
Medical Expenditure Panel Survey

- Sub-sample of respondents from the previous year’s National Health Interview Survey (NHIS), sponsored by NCHS
- Representative of the civilian non-institutionalized population of the US
- 5 in-person interviews over 2 ½ year period using CAPI technology.
- Person and family level data collected
- Interviews average 90 minutes with a range of one to four hours
1996-2005 MEPS Files: Panels 1 through 10

Panel 1

Panel 2

Panel 3

Panel 4

Panel 5

Parents of children 0-17 years of age
- Interviewed in one of 10 panels in the 1996-2005 MEPS (n=18,827)

Analysis of workdays lost:
- Limited to parents who reported full-time work for the entire study period (n=7,573)
Independent Variable: Childhood Activity Limitation

- **Definition**
  - “limited or prevented in any way in [their] ability to do things most children of the same age can do”
  - due to an impairment or a physical or mental health problem

- **Children were categorized as having:**
  - No Limitation
  - Newly reported limitation
  - Resolved Limitation
  - Ongoing Limitation
Limitation status was only collected in rounds 2 and 4 of the MEPS.

Children were categorized into the following groups:

1) no limitations in either round (No Limitation);
2) no limitation in round 2 but had a limitation in round 4 (Onset of Activity Limitation—Duration Unknown);
3) limitations in round 2 but no limitation in round 4 (Resolved Limitation); and
4) limitations in both rounds (Ongoing Limitation).
Dependent Variables

- Parental Health and Mental Health Status
  - Parent-reported health and mental health
  - Rating of fair or poor compared to rating of excellent, very good, or good.

- Workdays Lost
  - The number of days in which work was lost because of another person’s health problem
Dependent Variable: Workdays Lost

- The number of workdays lost indicates the number of days (during each round) in which work was lost because of another's health problem.
- This measure was constructed only for those parents who work full time outside the home and was not asked in every year of the MEPS.
  - Therefore, the analyses of workdays lost are based on the 1999-2005 MEPS and were conducted only among the subset of all parents who reported full-time employment for the entire study period.
Control Variables

- Parental age
- Race/ethnicity
- Education level
- Single parent household status
- Family size
- Poverty threshold level
- Region of the US
- Urbanicity
Control Variables

- Parental age
  - (18-34, 35-44, 45+ years)
- Race/ethnicity
  - (White non-Hispanic; Black non-Hispanic; Other non-Hispanic; and Hispanic)
- Education level
- Single parent household status
- Family size
  - (less than or greater than 4 people)
- Poverty threshold level
  - (Percent of poverty threshold: below 100%, 100-199%, 200-399%, 400% and higher)
- Region of the US
  - (West, Northeast, Midwest, and South)
- Urbanicity
  - (urban versus rural by Metropolitan Statistical Area (MSA) status).
- Baseline parental health, mental health and workdays lost
Analytic Approach

- SAS 9.2 and Stata 10.1 were used to correct for the complex sample design of the MEPS
- All results are based on parent-based weighted counts
Analytic Approach

- Chi-squared analyses
  - Test for differences in parent’s sociodemographic characteristics and children’s activity limitation status
  - Test for differences in children’s activity limitation status by parental health and mental health

- Means and standard deviations were generated for workdays lost.

- Pairwise comparisons among parental outcomes by child activity imitation status were conducted to test for between-group differences.
Analytic Approach

- **Multivariate logistic regression**
  
  - Determine the relationship between childhood activity limitation status and parental health and mental health outcomes (adjusting for demographic factors)
  
  - Additional logistic regression analyses were conducted using each type of limitation as the reference group to enable comparisons among parental outcomes by activity limitation groups.
Analytic Approach

- Work Days Lost

  - Negative binomial model

  Because of the skewed nature of the workdays lost data, a negative binomial model was used to examine the factors related to counts of workdays lost, adjusted for sociodemographic factors.
RESULTS
Overall, 15.6% of children experienced a limitation over the two year study period.
Descriptive Results

- Characteristics of parents of children with any type of activity limitation were more likely to be:
  - 35-44 years of age
  - Less educated
  - Living in a larger family
  - White (Non-Hispanic)
  - A single parent
  - Living below 200% of the poverty threshold
Descriptive Results (2)

- Parents of children with activity limitations did not differ from those without by:
  - gender
  - region of the country
  - urbanicity
Percent of Parents in Fair/Poor Health

Type of Childhood Limitation

- None: 7.0%
- Resolved: 14.0%
- New: 12.3%
- Ongoing: 17.1%
Percent of Parents in Fair/Poor Mental Health

Type of Childhood Limitation

- None: 3.8%
- Resolved: 7.5%
- New: 8.4%
- Ongoing: 11.8%
Parental Workdays Lost to Care for Others

Type of Childhood Limitation

- No Limitation
- Resolved
- Newly reported
- Ongoing

- > = 14
- > = 7
- > = 1
Adjusted Odds of Fair/Poor Parental Health*

Resolved New Ongoing

Odds Ratios (Log Scale)

Child Limitation Status
(Reference=No Limitation)

*Controlling for confounders
Adjusted Odds of Fair/Poor Parental Mental Health*

<table>
<thead>
<tr>
<th>Child Limitation Status (Reference=No Limitation)</th>
<th>Adjusted Odds Ratio (Log Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolved</td>
<td>1.4</td>
</tr>
<tr>
<td>New</td>
<td>1.9</td>
</tr>
<tr>
<td>Ongoing</td>
<td>2.4</td>
</tr>
</tbody>
</table>

*Controlling for confounders
Incident Rate Ratios of Parental Workdays Lost*

Resolved: 1.3
New: 1.9
Ongoing: 3.1

Child Limitation Status (Reference=No Limitation)

*Controlling for confounders
Conclusion

- This population-based study contributes to the understanding of the impact of children’s activity limitations on parental outcomes.
  - Parents of children with limitations are significantly more likely to experience worse health and mental health than parents of children without limitations.
Conclusions

Our results show that

- Parents of children with resolved, newly reported, and ongoing activity limitations were more likely to have adverse health and mental health.
- Parents of children with newly reported and ongoing activity limitations were more likely to lose time at work.

Compared to parents of children without limitations.
Conclusions

- Ongoing activity limitations have the greatest impact on parent’s subsequent health and mental health status.

- Even resolved and newly reported activity limitations have a lasting impact on health, mental health, and work attendance.
Implications

- For healthcare providers
  - Underscores the importance of following parents over time
  - Ensure that parents’ health and mental health needs are addressed

- For employers
  - Extending respite care to their employees may help to support these families and augment workplace attendance and productivity
Implications

- **Families**
  - Impact of childhood limitations on parental work can have lasting effects on family socioeconomic status.
  - Parental health and mental health could impact the child’s psychosocial adjustment.
Limitations

- Child activity limitation status is based on parental report.

- Use of a general measure of limitation
  - Cannot determine why limitations may have caused long-term poor parental outcomes
NEXT STEPS AND FUTURE DIRECTIONS
Next Steps: Do the spillover effects get under the skin?

- Examine how the stress of caring for a child with limitations may “get under the skin” to impact adverse health and mental health outcomes for parents.
- Ultimately look at how well stress biomarkers and self-perceived measures of parental stress correlate with subsequent health outcomes for these children.
Next Steps (2)

- Look at how parental stress may accelerate the aging process
- How does parental health and mental health in turn impact child health outcomes?
Next Steps: Financial Burden

- Impact of childhood activity limitations on child and family-level healthcare related financial burden in the US
  - Absolute and Relative Financial Burden
  - Financial Burden at the Child AND Family level
  - Disparities across income and activity limitation status

- Role of insurance
A conceptual framework for the role of the family in determining child and family health and health care disparities

Thanks!

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