



Impact of Uncontrolled Pediatric Asthma on Health-Related Quality of Life (HRQOL)

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This study was funded by Genentech, Inc. and Novartis Pharmaceuticals Corporation.



Background


Asthma in Children

- Approximately 9 million US children <18 years of age have been diagnosed with asthma¹
- Asthma was the leading cause of hospitalization among children 3 to 12 years of age in 2002²
- Asthma accounts for 14 million school days missed annually^{3,4}

Asthma Control in Children

- The National Heart, Lung, and Blood Institute (NHLBI) has created clinical guidelines for the diagnosis and management of asthma
- A recent national survey evaluated asthma control in children and found that asthma control fell short on nearly every goal⁵


¹ Bloom B. *Vital Health Stat* 10 2006;(227):1-85.
² Owens PL. *AHRQ Publication No.* 04-0064. 2003.
³ Environmental Hazards and Health Effects: Asthma's Impact on Children and Adolescents. DHHS, 2002.
⁴ Dietz GB et al. *Arch Pediatr Adolesc Med* 2000; 154(9):923-928.
⁵ Children and Asthma in America. http://www.asthmainamerica.com/children_index.html



Study Aims

To assess the association between asthma symptom control and:

- HRQOL among children with asthma
- Social functioning among children with asthma
- Caregiver quality-of-life (QOL)



Study Design and Data

Study Design and Sample


- Cross-sectional Internet-based survey of caregivers of asthmatic children ages 6 to 12
- Random sample from a panel of 5 million individuals

Inclusion Criteria

- Doctor's diagnosis of asthma (parent-reported)
- Met criteria for "moderate to severe asthma" based on current medications and healthcare utilization within the previous year

Exclusion Criteria

- Off-label use of Xolair




Classification of Uncontrolled Asthma

Based on the National Asthma Education and Prevention Program (NAEPP) 2007 guidelines,⁶ patients were classified as uncontrolled if they satisfied any of the following:

- Symptoms ≥ 2 days per week
- Awakened by symptoms ≥ 1 night per week
- Activity limitation due to impairment or health problem
- Rescue inhaler use > 5 times per week

⁶ NHLBI. NAEPP Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. 2007.



Measuring HRQOL: CHQ-PF28


Child Health Questionnaire – Parent Form 28 (CHQ-PF28)

- Instrument used to measure HRQOL in children and their families⁷
- Completed by a parent
- 28 items addressing 13 scales
 - 9 Child Health Scales (including the 'Change in Health' [CH] scale)
 - 4 Parent/Family Impact Scales
- 2 summary measures
 - Physical summary measure (PHS)
 - Psychosocial summary measure (PSS)

Interpreting the CHQ-PF28

- All measures are transformed to scores ranging from 0 to 100 (except the CH scale)
- The 2 summary measures are standardized to have a mean of 50 and standard deviation of 10
- Lower scores correspond to lower HRQOL
- A difference of 5 points is considered to be clinically significant, while 10 points is considered to be a moderate difference

⁷ Raat H. *J Epidemiol Community Health* 2005; 59:75-82.



Measuring Activity Avoidance

'SleepLearnPlay'

- Modified version of the web-based questionnaire developed to assess the impact of asthma on a child's sleep, learning, and activities or play^a
- Completed by a parent
- Assessed avoidance of activities such as:
 - ◆ Field trips
 - ◆ Outdoor activities
 - ◆ Sleepovers
 - ◆ Pets
 - ◆ Camping
 - ◆ Playing with friends
 - ◆ Visiting with friends and family
- Avoidance reported on a 5-point Likert scale ranging from "None of the time" to "All of the time"
- Dichotomized into none/a little of the time versus some/most/all of the time

^a SleepLearnPlay, AAFA. Sponsored by Genentech, Inc. and Novartis Pharmaceuticals Corporation. <http://www.sleepworkplay.com/questionnaire.php?QuizChoice=child>



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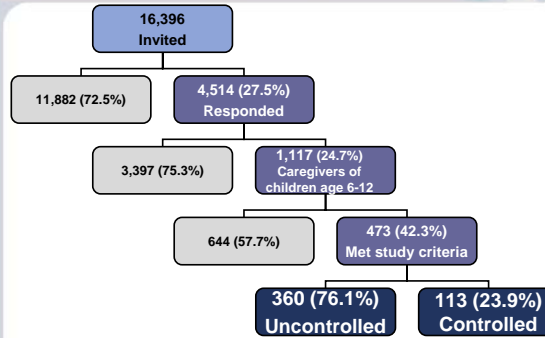
Statistical Analysis

- For each study participant, CHQ-PF28 scores were calculated for 12 scales and the 2 summary measures
- The two sample t-test procedure was used to compare the mean scores of uncontrolled and controlled asthma patients
- The chi-square test procedure was used to compare the CH scale of the CHQ-PF28 and the activity avoidance questions



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Description of Study Population



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Socio-Demographics: Caregivers

		Caregivers of Children with Uncontrolled Asthma N=360	Caregivers of Children with Controlled Asthma N=113	P Value
Age	Mean age, years (SD)	40.4 (9.0)	41.5 (8.0)	0.2428
Gender	Male, n (%)	83 (23.1)	39 (34.5)	0.0190
	Female, n (%)	277 (76.9)	74 (65.5)	
Relationship	Parent/Step-parent, n (%)	323 (89.7)	103 (91.2)	0.2779
	Grandparent, n (%)	35 (9.7)	8 (7.1)	
	Custodial guardian, n (%)	2 (0.6)	2 (1.8)	



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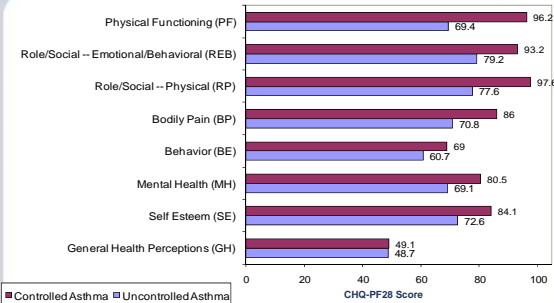
Socio-Demographics: Children

		Children with Uncontrolled Asthma N=360	Children with Controlled Asthma N=113	P Value
Age	Mean age, years (SD)	9.1 (2.0)	9.0 (2.1)	0.8628
	Mean age at diagnosis, years (SD)	3.5 (2.7)	3.6 (2.7)	0.7154
Gender	Male, n (%)	216 (60.0)	78 (69)	0.0956
	Female, n (%)	114 (40.0)	35 (31.0)	



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CHQ-PF28: Child Health Scales



Note: all differences had a P value <0.0001 except for BE (P = 0.0004) and GH (P = 0.6870)
No significant difference in Change of Health scale (categorical) - not shown here



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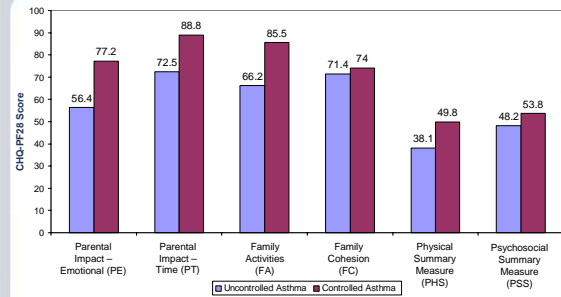
CHQ-PF28: Child Health Scales

	Uncontrolled Asthma N=360	Controlled Asthma N=113	P value
Change in Health (CH), n (%)			
Much better now	54 (15.0)	23 (20.4)	0.0866
Somewhat better now	106 (29.4)	37 (32.7)	
About the same	175 (48.6)	52 (46.0)	
Somewhat worse now	22 (6.1)	1 (0.9)	
Much worse now	3 (0.8)	0 (0.0)	



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CHQ-PF28: Other Scales and Measures

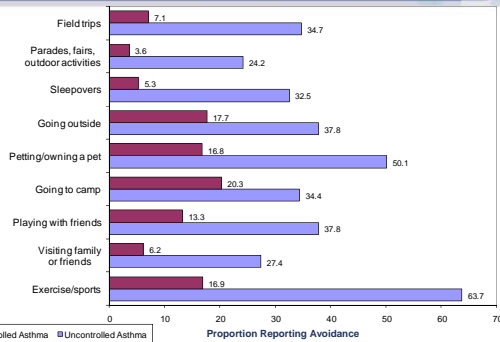


Note: all differences had a P value <0.0001 except for FC (P = 0.2965)



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Avoidance of Activities



Note: all differences had a P value <0.05



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Limitations

- Use of an Internet population may limit the generalizability of this study
- Recall and observer bias for symptom occurrence and severity among caregivers may have affected interpretation of results
- Use of medications to classify adequate treatment is based on the underlying assumption that patients are receiving adequate treatment
- Symptom control was assigned based on criteria outlined in the NAEP 2007 guidelines. However, our survey responses could not be mapped to exactly match the criteria outlined in the NAEP 2007 guidelines



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Conclusions and Implications

Conclusions

- Uncontrolled asthma had a significant impact on a child's HRQOL and daily functioning
- Uncontrolled asthma has a significant HRQOL impact on both the caregiver and family
- Uncontrolled asthma impacts both physical and psychosocial functioning

Implications

- Better control of symptoms among patients with uncontrolled asthma may help improve the HRQOL of both patients and their caregivers



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