

# Quality of life among school going children with asthma

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## Abstract

Asthma is a major cause of chronic respiratory problem in childhood. It is one of the most frequent admitting diagnosis in children's hospitals and is an important cause for school days lost. Asthma prevalence seems to be increasing worldwide. The patient details, growth parameters and the responses related to quality of life were entered in the Microsoft Excel worksheet. The impairment in growth parameters as well as impairment in quality of life were tried to correlate with the disease, severity of disease as well as lack of proper control. QOL of children with asthma was assessed and was found that it was poor in all parameters like activity limitations, emotional factors and symptoms. It was found that QOL was poor in severe asthma in 5 to 10 and 11 to 15 years age group as compared to mild and moderate asthma children. QOL was found to be better in well controlled asthma children in 11 to 15 year age group children but such difference in QOL was not found in well controlled asthma children in 5 to 10 year age group.

**Key Word:** Quality Of Life, School Going Children, Asthma

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## INTRODUCTION

Children suffering from asthma can show growth retardation both in height and maturation. It has been further suggested that the retarded bone age of most children with severe asthma indicates that they will tend to mature late and will ultimately grow to a normal height<sup>1</sup>. The purpose of this study is to study the growth variables (height, weight, and body mass index) of children with asthma in the age range of 5-15 years<sup>2</sup>. Children with asthma are predisposed to exacerbations. This holds irrespective of the type of asthma the reason for exacerbation can be a viral illness, physical activity or exposure to allergens. Hospitalization of patients with acute attack poses financial and other problems. In the

management of acute attack, inhaled salbutamol and systemic steroids are of proven benefit<sup>3</sup>. Early use of steroids in preventing worsening of asthma has been studied. There are studies on the efficacy of methyl prednisolone and oral prednisolone<sup>4</sup>. Methyl prednisolone is expensive and oral prednisolone may not be tolerated by children. In this study single dose betamethasone is given as steroid. It is longer acting and more potent than dexamethasone. The adverse effects following single dose is few and mineralocorticoid activity is practically nil. It is also cheaper compared to methylprednisolone.<sup>5</sup> Asthma is a major cause of chronic respiratory problem in childhood. It is one of the most frequent admitting diagnosis in children's hospitals and is an important cause for school days lost. Asthma prevalence seems to be increasing world wide<sup>6</sup>. WHO estimates that there are approximately 100 million asthmatics world wide. Deaths due to asthma, though rare in childhood, have increased over the past decades.

## METHODOLOGY

The original pre-validated Paediatric Asthma Quality of Life Questionnaire English version for India, *Interviewer Administered* (Elizabeth Juniper, Professor, Dept of Clinical Epidemiology and Biostatistics, Mac Master

University, UK and QOL Technologies Ltd.) was utilized with their permission. ‘Interviewer administered’ was chosen to overcome the language barrier. There were 23 items in the questionnaire, out of which 10 questions (4, 6, 8, 10, 12, 14, 16, 18, 20, and 23) were related to symptoms. 5 questions were related to activity limitation (1, 2, 3, 19, and 22). 8 questions were related to emotional function (5, 7, 9, 11, 13, 15, 17, and 21). Children were asked to recall their experiences for filling up the questionnaire. Responses from the children were not prompted or altered. It was a 23 point questionnaire with each item having 7 possible responses, 7 being the best score, 1-greatest impairment and 4-moderate impairment. It was explained to the child in detail before administering the test. The average of the

scores was taken as the assessed QOL. Separate qualities related to symptoms, activity limitation as well as emotional function was also assessed. This was to understand whether physical or emotional domains were maximally affected. For testing quality of life of children with asthma ANOVA test was used. If the p value is less than the significant level that is alpha=5%, then the test was taken as statistically significant. The patient details, growth parameters and the responses related to quality of life were entered in the Microsoft Excel worksheet. The impairment in growth parameters as well as impairment in quality of life were tried to correlate with the disease, severity of disease as well as lack of proper control.

## RESULTS

QOL of children with asthma was assessed and was found that it was poor in all parameters like activity limitations, emotional factors and symptoms. It was found that QOL was poor in severe asthma in 5 to 10 and 11 to 15 years age group as compared to mild and moderate asthma children. QOL was found to be better in well controlled asthma children in 11 to 15 year age group children but such difference in QOL was not found in well controlled asthma children in 5 to 10 year age group. Lastly, activity limitation and emotional factor were compared between 5-10 and 11-15 year age group asthma children and it was found in my study that 11-15 year age group were more effected. All the three tested parameters which determine the quality of life like activity limitation, symptoms as well as emotional factor were found to show increasing impairment according to increase in the severity of asthma among the newly diagnosed cases.

**Table 1:** Quality of life and severity of asthma in 5-10 years age group

Asthma severity	Quality of life					
	Activity limitation		Symptoms		Emotional factor	
	Mean	SD	Mean	SD	Mean	SD
Mild	4	0.2481	4.46	0.1865	4.05	0.2576
Moderate	3.77	0.6069	<b>4.11</b>	<b>0.3877</b>	3.65	0.4646
Severe	<b>3.43</b>	<b>0.6676</b>	<b>3.89</b>	<b>0.5107</b>	<b>3.26</b>	<b>0.7098</b>

(There is significant difference in the quality of life in children with asthma.)

**Table 2:** statistical significance in the difference in quality of life between severe asthma and mild asthma

Quality of life	F	p value
Activity limitation	3.65	0.034
Symptoms	7.77	0.001
Emotional factor	8.38	0.001

QOL is poor in severe persistent asthma children in all the aspects viz. activity limitation, symptom score and emotional factor with mean scores of 3.43 (SD 0.66), 3.89 (SD 0.510), 3.26 (SD 0.709) respectively as compared to moderate asthma children and mild asthma children. Moderate asthma differed from mild asthma children only in terms of symptom score but not in terms of activity or emotions. There is significant difference in the quality of life in children as the severity of asthma increases.

**Table 3:** quality of life in children with asthma in 11-15 years age group

Asthma	Quality of life					
	Activity limitation		Symptoms		Emotional factor	
	Mean	SD	Mean	SD	Mean	SD
Mild	3.75	0.6870	4.35	0.3759	3.73	0.6393
Moderate	3.48	0.5531	4.03	0.3554	3.17	0.4173
Severe	3.15	0.5238	3.78	0.4764	2.87	0.5453

**Table 4:** statistical significance of the difference in quality of life with increasing severity of asthma

Quality of life	F	p value
Activity limitation	3.63	0.034
Symptoms	7.65	0.001
Emotional factor	9.99	0.00

QOL is poor in severe persistent asthma children in all the aspects viz. activity limitation, symptom score and emotional factor with mean scores of 3.15 (SD 0.523), 3.78 (SD 0.476), 2.87 (SD 0.545) respectively as compared to moderate asthma children and mild asthma children. Moderate asthma differed from mild asthma children only in terms of symptom score but not in terms of activity or emotions. A comparison was done regarding the quality of life with the control of asthma with medications.

**Table 5:** Difference in QOL in children according to the 'control' of asthma in 5-10 years age group

Asthma control	Quality of life					
	Activity limitation		Symptoms		Emotional factor	
	Mean	SD	Mean	SD	Mean	SD
Well Controlled	3.747	0.5917	4.223	0.3850	3.546	0.5450
Partially Controlled	3.775	0.7960	4.125	0.5390	3.547	0.7760
Poorly Controlled	3.350	0.7210	3.938	0.4110	3.195	0.6550

**Table 6:** Statistical significance of the observations in the QOL according to the disease control in 5-10 years age group

Quality of life	F value	p value
Activity limitation	0.208	0.814
Symptoms	0.078	0.925
Emotional factor	0.261	0.773

Our study couldn't find a significant difference in quality of life of children of 5-10 year age group between well controlled asthma children and poorly controlled. The study found that there was significant improvement in QOL of children of 11-15 year old children according to the disease control. Quality of life was better in well controlled asthma children with mean score of 3.621 (SD 0.537), 4.200 (SD 0.382) and 3.300 (SD 0.492) in activity limitation, symptoms and emotional factors.

**Table 7:** Difference in QOL in children according to the 'control' of asthma in 11-15 years age group

Asthma control	Quality of life					
	Activity limitation		Symptoms		Emotional factor	
	Mean	SD	Mean	SD	Mean	SD
Well Controlled	3.621	0.537	4.200	0.382	3.330	0.492
Partially Controlled	2.800	0.00	3.500	0.141	2.440	0.088
Poorly Controlled	2.930	0.574	3.690	0.293	2.750	0.258

**Table 8:** Statistical significance of the observations in the QOL according to the disease control in 5-10 years age group

Quality of life	F value	p value
Activity limitation	6.137	0.006
Symptoms	8.591	0.001
Emotional factor	8.216	0.002

An attempt was done to compare the limitation in activity and the emotional factors between children with asthma belonging to the age groups of 5-10 and 10-15 to see whether there was any difference between these.

**Table 9:** Comparison of activity limitation and emotional factors between children with asthma belonging to the age groups 5-10 and 10-15 years

Age	Quality of Life					
	Activity limitation			Emotional factor		
	N	Mean	Standard deviation	N	Mean	Standard deviation
5-10	50	3.75	0.5797	50	3.67	0.5681
11-15	50	3.48	0.6234	50	3.27	0.6158

There is significant difference in activity limitation between 5-10 & 11-15 year age groups (p value = 0.028). There is also difference in the emotional level between 5-10 & 11-15 age groups (p value = 0.002). Activity limitation and emotional disturbances were more in 11 to 15 year age group children.

## DISCUSSION

Our study found a statistically significant difference in quality of life of children in asthma in both age groups 5-10 years and 11-15 years with p value-0.003. Other studies done also had similar conclusions. Study done by Patrecia Gomez *et al* in Rio de Janeiro<sup>7</sup>, Brazil concluded that children affected with asthma had poor quality of life and all parameters activity limitation, symptoms and emotional factors were affected. Study done by Cerovic *et al*<sup>8</sup>, a Siberian study also concluded that there was statistically significant difference in quality of life in asthma affected children that severe asthma children had more poor quality of life with mean score of 3 to 4 in all parameters and their activity limitation score was more affected with mean score of 3. Our study found that children with severe asthma had statistically significant poor quality of life affecting all the 3 parameters. Study done by Cerovic *et al*<sup>8</sup>, a Siberian study also concluded that there was statistically significant difference in quality of life in children who had severe asthma with mean score of 3 to 4 in all parameters and their activity limitation score was more affected with mean score of 3. One of the reason for having poor quality of life in severe asthma children is their activities are restricted to prevent exacerbation as increased physical activity is one of the triggering factor for asthma exacerbation. Our study also found that children who had well control of asthma had a better quality of life as compared to poor and partially controlled asthma children in 11-15 year age group but no such difference in quality of life was found between well controlled and poorly controlled asthma children in 5-10 year age group. Similar study done by Nordlund *et al*<sup>9</sup>, also found that poorly controlled asthma children had a poor quality of life in children with poorly controlled asthma as compared to well controlled asthma children in both younger and older age group children. One of the reason maybe that younger children do not restrict their activities much leading to asthma exacerbations. In our study we found that activity limitation and emotional factors were more effected in 11-15 year age group as compared to 5 to 10 year age group children effected with asthma. Study done by Patrecia Gomez *et al* in Rio de Janeiro<sup>7</sup>, Brazil concluded that study also concluded that there was no statistically significant difference in terms of emotional and activity limitation between younger children and adolescents. The

main reasons for activity limitation and emotional disturbances more common in 11-15 year age group asthma children is probably there are more psychologically affected due to several hospital admissions for the exacerbations and the children themselves restrict their activity so as to prevent exacerbations. Whereas the younger children they don't restrict their activities.

## CONCLUSION

Quality of life is impaired in children affected with asthma. Impairment in quality of life is more in severe persistent asthma compared to mild and moderate forms of asthma. Children with well controlled asthma have better quality of life as compared to children with partially and poorly controlled asthma in 11 to 15 year age group even though no such significant difference was found in 5 to 10 years age group. Activity and emotional factors are more affected in the age group 11 to 15 years.

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