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Assessment of quality of life in children suffered from asthma

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Abstract
Children with very severe asthma tend to have worse Quality of Life (QOL) than children with milder disease. However recent research has shown that QOL does not correlate closely with asthma control and is a very distinct component of overall asthma health status. Hence from the present literature the current study was planned to compare changes in QOL score with objective measures of pulmonary function and subjective assessment of clinical status, in children with persistent bronchial asthma.
The study was planned in Upgraded Department of Paediatrics in the Patna Medical College and Hospital, Patna from Jan 2016 to Dec 2016. The 30 children's aged 6 -14 years diagnosed with the Asthma were included in the present study. Forced Expiratory Volume in first second (FEV1) and Forced Vital Capacity (FVC) were recorded according to the recommendations of American Thoracic Society. PEFR was measured by Mini Wright's Peak Flow Meter.
Hence from the above data findings it can be concluded that there association of poorly controlled asthma with a poor quality of life. It is recommended that the quality of life of children should be assessed and observed during clinic visits for a better holistic approach and effective improvement of outcome.

Keywords: asthma quality of life, forced expiratory volume in first second (FEV1) and forced vital capacity (FVC)

Introduction
Asthma is a recurring inflammatory lung disorder in which certain stimuli (triggers) inflame the airways and cause them to temporarily narrow, resulting in difficulty breathing. Although asthma can develop at any age, it most commonly begins in childhood, particularly in the first 5 years of life. Some children continue to have asthma into the adult years. In other children, asthma resolves. Sometimes, children who doctors thought had asthma actually had another disorder that caused similar symptoms.
Asthma is a common long-term inflammatory disease of the airways of the lungs. It is characterized by variable and recurring symptoms, reversible airflow obstruction, and bronchospasm [1]. Symptoms include episodes of wheezing, coughing, chest tightness, and shortness of breath. These episodes may occur a few times a day or a few times per week. Depending on the person, they may become worse at night or with exercise [2].
Asthma is one of the most common chronic diseases of childhood, affecting more than 6 million children in the United States. It occurs more frequently in boys before puberty and in girls after puberty. Asthma has become much more common in recent decades. Doctors are not sure why this is so. More than 8.5% of children in the United States have been diagnosed with asthma, which is over a 100% increase in recent decades. The rate soars to 25% to 40% among some populations of urban children. Asthma is a leading cause of hospitalization for children and is the number one chronic condition causing elementary school absenteeism. Most children with asthma are able to participate in normal childhood activities, except during flare-ups. A smaller number of children have moderate or severe asthma and need to take daily preventive drugs to enable them to engage in sports and normal play. For unknown reasons, children with asthma respond to certain stimuli (triggers) in ways that children without asthma do not. Children with asthma may have certain genes that may make them more susceptible to react to certain triggers. Most children with asthma also have parents and siblings or other relatives with asthma, which is evidence that genes are important in asthma.
A child with one parent who has asthma has a 25% risk of developing asthma. If both parents have asthma, the risk increases to 50%. Children whose mothers smoked during pregnancy may be more likely to develop asthma. Asthma also has been linked to other factors related to the mother, such as young maternal age, poor maternal nutrition, and lack of breastfeeding. Prematurity and low birth weight are also risk factors.
In the United States, children in urban environments are more likely to develop asthma, particularly if they are from lower socioeconomic groups. Although it is not entirely understood, it is believed that poorer living conditions, greater potential exposure to triggers, and less access to health care contribute to the higher incidence of asthma in these groups. Although asthma affects a higher percentage of black children than white, the role that genetic aspects of race play in the increasing rate of asthma is controversial because black children are also more likely to live in urban areas.
Children who are exposed to high concentrations of certain allergens, such as dust mites or cockroach feces, at an early

age are more likely to develop asthma. However, doctors have noticed that asthma is more common among children in developed countries. Children in these countries tend to live in very clean, hygienic environments and are exposed to fewer infectious diseases than children who live in less developed countries. Thus, doctors think that perhaps childhood exposure to certain substances and infections may actually help children's immune system learn not to overreact to triggers.

Most children who are having an asthma attack and 90% of children who have been hospitalized for asthma have a viral infection (usually rhinovirus or the common cold). Children who have bronchiolitis at an early age often wheeze with subsequent viral infections. The wheezing may at first be interpreted as asthma, but these children are no more likely than others to have asthma during adolescence. Diet may be a risk factor. Children who do not consume enough of vitamins C and E and omega-3 fatty acids or who are obese may be at risk of asthma [3].

Children with very severe asthma tend to have worse Quality of Life (QOL) than children with milder disease. However recent research has shown that QOL does not correlate closely with asthma control and is a very distinct component of overall asthma health status [4].

Hence from the present literature the current study was planned to compare changes in QOL score with objective measures of pulmonary function and subjective assessment of clinical status, in children with persistent bronchial asthma.

Methodology

The study was planned in Upgraded Department of Paediatrics in the Patna Medical College and Hospital, Patna from Jan 2016 to Dec 2016. The 30 children's aged 6-14 years diagnosed with the Asthma were included in the present study. The approval of the institutional ethics committee was taken before starting the study. All the patients and their parents were informed consents. The aim and the objective of the present study were conveyed to them.

Following was the inclusion and exclusion criteria for the present study

Inclusion Criteria

- Childrens aged 6-14 year
- Childrens positive for the Asthmatic conditions

Exclusion Criteria

- Positive history of any other chronic medical conditions.
- Children with mental sub normality and those physically challenged.
- Childrens above 14 years of age.

A detailed history, clinical examination and relevant investigations were done to rule out any infective focus.

During this visit, children and their parents were educated about the disease, therapeutic options, avoidance of triggers for acute attacks and familiarized with warning symptoms and signs of acute exacerbation. They were trained in the use of inhalation therapy, care and maintenance of inhalation devices and home monitoring of the child's condition. Spirometry was performed by at rained technician using Compact Spirometer (Cat No 42.000, Vitalograph Limited, Buckingham England). Forced Expiratory Volume in first second (FEV1) and Forced Vital Capacity (FVC) were recorded according to their commendations of American Thoracic Society. PEFR was measured by Mini Wright's Peak Flow Meter (Mini Wright Cat No 3103001, England) and percentage calculated against the expected/predicted asper Indian norms [5].

Results & Discussion

The data from the 30 children's aged 6-14 years diagnosed with the Asthma were collected and presented as below.

Table 1: Age & Sex

	Number of Cases
6-10 years	15
10-12 years	10
12-14 years	5
Total	30
Sex	
Girl	11
Boys	19
Total	30

Table 2: Quality of Life Score

	Initial Follow up	**Follow up visits after 1 month**	**Follow up visits after 3 month**
Quality of Life Score	106-117	137-152	155-161
Forced Expiratory Volume in first second (lit)	0.55-1.32	0.78-1.56	0.86-1.65
Forced Vital Capacity (lit)	0.78-1.35	0.89-1.63	1.19-1.82
peak expiratory flow rate (lit/min)	123-201	152-240	183-286

The two findings emerged from this study. First, asthma control status among children was surprisingly low considering that those patients were approached during a follow-up appointment. Second, the quality of life of asthmatic children was significantly lower among those with poorly controlled asthma.

Male predominance (3.6:1) was observed and also reported in the Brazilian study and the study by Juniper *et al*. which was similar to our study group [6]. In a study from Postgraduate Institute of Medical Education and Research, Chandigarh (PGIC), 85% of children in the study had moderate persistent asthma [7]. In the Brazilian study moderate persistent type of asthma accounted for 67.8% [6]. In the study from Turkey majority of cases [8]. Assessment of quality of life is able to overcome several of these limitations, since it provides information of the overall status over a longer duration. There are a few tools available in Western countries for evaluating QOL in asthmatic children [9, 10]; however they cannot be directly extrapolated to Indian children due to socio-cultural differences and behavioural life-style variations. One of the strengths of our study is the use of an indigenously developed, pre-tested, locally appropriate, disease specific tool for assessing quality of life.

This study has shown that improvement in QOL score with treatment compares well with improvement in objective measures of pulmonary function. This indirectly indicates the efficacy of QOL score for measurement of clinical status.

Although temporal changes in PFT compare well with changes in QOL score, absolute measurements during a particular visit may not have a strong correlation. This happens because QOL score evaluates the child's condition over a longer time frame; in contrast, PFTs are a one-time measurement and reflect the child's condition at the time of testing, which may not always be representative of the overall clinical status.

Secondly, the PFTs are dependent on the effort and cooperation of the child. QOL and symptom score are less demanding on the child, and likely to reflect his/her functional status better.

The observations in this study clearly highlight the fact that as asthma control remains very poor in India. Among the nine countries that were studied from the Asia Pacific region, Indian asthmatics had the worst outcomes. These observations are indeed very worrisome and suggest an urgent need to take active measures to overcome these issues and improve asthma care in India.

Asthma management remains poor in India, despite the fact that our understanding of asthma has improved significantly over the last 2-3 decades with an increase in asthma prevalence, and that there are highly effective and affordable medicines that can bring about significant relief of symptoms and improvement in quality of life.

Conclusion

Hence from the above data findings it can be concluded that there association of poorly controlled asthma with a poor quality of life. It is recommended that the quality of life of children should be assessed and observed during clinic visits for a better holistic approach and effective improvement of outcome.

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