



Study of Rhinoconjunctivitis Quality of Life (RCQOL) in Children with Asthma and Allergic Rhinitis

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Abstract

Introduction: Allergic Rhinitis (AR) is a non-infectious epidemic which can be prevented and controlled effectively with good quality of life in compliant children following the conventional inhalational therapies diligently. Paediatric Rhino-conjunctivitis Quality of Life Questionnaire (PRQLQ), devised by Professor Elizabeth Juniper is a validated questionnaire consisting of 23 parameters in 5 domains. It is one of the best possible ways to judge the clinical severity and improvement in the affected children.

Aims and Objectives: To study the clinical profile in childhood Asthma and Allergic Rhinitis.

Material and Methods: The study included 30 patients in the age group of 6 to 12 years diagnosed with Allergic Rhinitis. The Quality of Life was analysed using Paediatric Rhino-conjunctivitis Quality of Life Questionnaire (PRQLQ).

Results: Cough featured in (90%) of the subjects followed by sneezing, rhinorrhoea and nose block. Allergic shiners were seen in (63%) children followed by Deviated Nasal Septum (DNS) in (46.7%) and Inferior turbinate hypertrophy (ITH) in (40%) cases. The Quality of Life parameters revealed nasal symptoms (100%), Practical problems (80%) and Activity limitations (70%). Majority of the subjects had mild affection (66.7%) in different domains of PRQLQ. Asthma was the most common comorbidity (90%) and family history of Allergic Rhinitis featured in (66.7%) cases.

Conclusion: All the domains of PRQLQ have to be critically evaluated in childhood AR. The questionnaire would aid in clinical assessment, therapeutic alterations and over all well-being of the child.

Keywords: Allergic Rhinitis; Asthma; Paediatric Rhino-conjunctivitis Quality of Life Questionnaire (PRQLQ); Deviated Nasal Septum (DNS); Inferior turbinate hypertrophy (ITH)

Abbreviations: AR: Allergic Rhinitis; RCQOL: Rhino-Conjunctivitis Quality of Life; PRQLQ: Paediatric Rhino-Conjunctivitis Quality of Life Questionnaire; DNS: Deviated Nasal Septum; IEC: Institutional Ethics Committee; SD: Standard Deviation, ARIA: Allergic Rhinitis and its Impact on Asthma.

Introduction

Asthma and Allergic Rhinitis is considered as one airway one disease. Allergic manifestations in the form of Asthma and Allergic Rhinitis (AR) is a non-infectious epidemic which can be prevented and controlled effectively with good quality

of life in compliant children following the conventional inhalational therapies diligently. The prevalence of Allergic Rhino-conjunctivitis has approximately doubled over the past 20 years. Children with AR have been found to be at a greater risk of developing Asthma, Sinusitis, Behavioural & Sleep disturbances which can largely impact the child's quality of life, cognitive function and school performance [1,2]. PRQLQ was devised by Juniper EF, et al. to measure the quality of life in children with Allergic Rhinitis (AR) [3]. The PRQLQ (Paediatric Rhino-conjunctivitis Quality of Life) Questionnaire has 23 questions in 5 domains (Nose symptoms, Eye symptoms, Practical problems, Activity limitations and Other symptoms) [4]. The overall PRQLQ score is the mean of all 23 responses and the individual scores is the mean of the items within those domains [5-7].

Aims & Objectives

1. To study the clinical profile in childhood Asthma and Allergic Rhinitis.
2. To evaluate the comorbidities of Asthma and Allergic Rhinitis.
3. To study the association of rhino-conjunctivitis quality of life in childhood asthma and allergic rhinitis

Materials and Methods

This was a prospective study conducted over a 2-year period in a tertiary care hospital in Navi Mumbai. The study included 30 patients between the age group of 6 to 12 years having symptoms and signs of Allergic Rhinitis.

Patient data was recorded in a pre-designed Proforma which included demographic details, history and examination findings. Rhino-conjunctivitis Quality of Life (RCQOL) scoring was done using PRQLQ Questionnaire as devised by Juniper EF, et al. for all the children with Allergic Rhinitis, satisfying the inclusion criteria. The study was approved by Institutional Ethics Committee (IEC) and an informed consent was obtained from parents/guardians of the participants. Children were asked to recall how they have

been during the previous week and respond to each question on a 7-point scale. The overall PRQLQ score was calculated as a mean of all 23 responses and the individual domain scores as a mean of the items within those domains. The quality of life affected in these children was then correlated with the severity of illness.

Inclusion Criteria

1. Children between 6-12 yrs of age with asthma and allergic rhinitis satisfying the GINA (Global Initiative for Asthma) and ARIA (Allergic Rhinitis and its Impact on Asthma) guidelines.
2. Informed Consent given by the parents/guardians.

Exclusion Criteria

1. <6 years and >12 years of age.
2. Children with rhinitis of infective aetiology.
3. Children unable to complete the RCQOL questionnaire.
4. Parents and children who have not consented for the study.

Statistical Analysis

After data collection, entry was done in Microsoft Excel. Data analysis was done with the help of SPSS software v.23.0. All characteristics were summarized descriptively. For continuous variables, the summary statistics of mean \pm standard deviation (SD) were used. For categorical data, the number and percentage were used in the data summaries and diagrammatic presentation. Chi-square (χ^2) test was used for association between two categorical variables.

Results

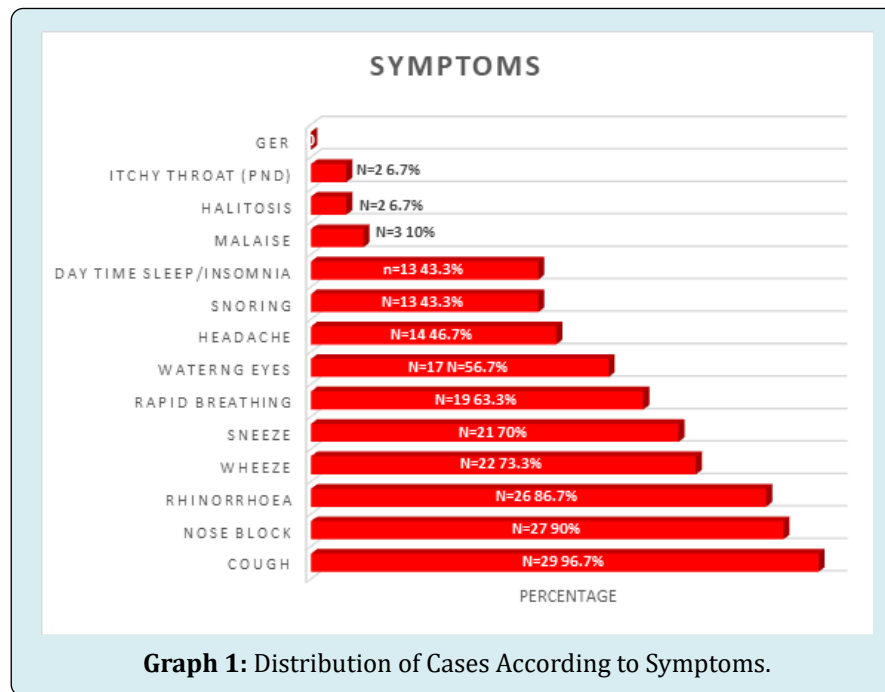
In the present study, 30 patients of Allergic Rhinitis (AR) between the age group of 6-12 years were enrolled. 4 of 10 (40%) children with family history of both allergic rhinitis and asthma, had moderate-severe persistent type of allergic rhinitis and 6 of 12 (50%) without any family history had mild intermittent type of allergic rhinitis (Table 1).

Family History	Classification of Allergic Rhinitis							
	Mild Intermittent		Mod-Severe Intermittent		Mild Persistent		Mod-Severe Persistent	
	N	%	N	%	N	%	N	%
Allergic Rhinitis	0	0%	1	33.3%	0	0%	2	66.67%
Asthma	1	20%	2	40%	1	20%	1	20%
AR + Asthma	2	20%	2	20%	2	20%	4	40%
Nil	6	50%	2	16.6%	1	8.3%	3	25%

Table 1: Association Severity of Allergic Rhinitis and Family History.

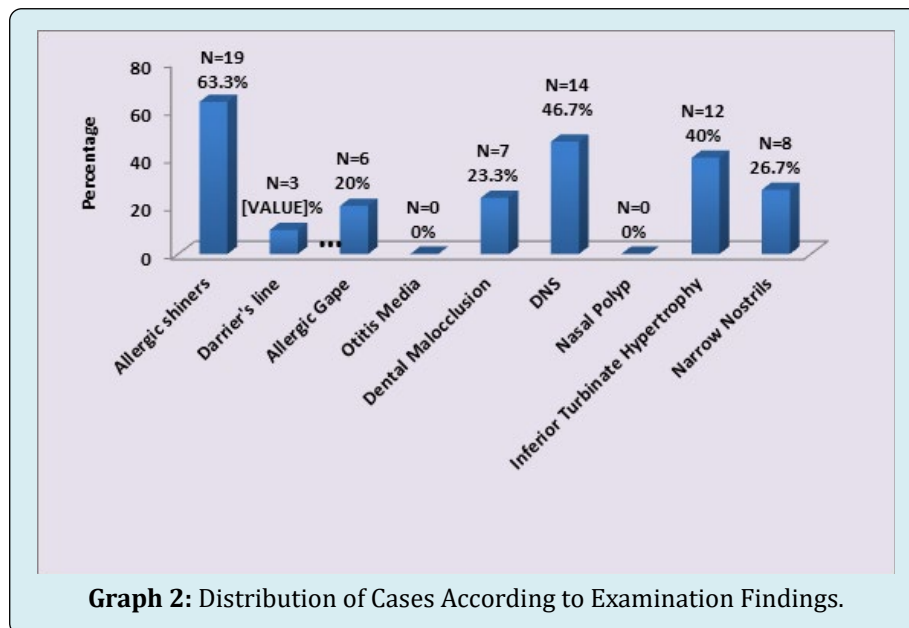
Cough was the major presenting symptom in 29(96.7%) children, followed by rhinorrhoea 26(86.7%) and sneezing 21(70%) respectively. Wheeze, rapid breathing and headache

were seen in 22(73.3%), 19(63.3%) and 14(46.7%) cases respectively day time sleep and snoring in 13(43.3%) each (Graph 1).



In our study, allergic shiners was a common examination finding noticed in nearly 19(63%) children followed by

DNS and inferior turbinate hypertrophy in 14(46.7%) and 12(40%) children respectively (Graph 2).



Highest number of children 27(90%) had asthma as a comorbidity. Post nasal drip was seen in 22(73.3%), Pharyngotonsillitis in 12(40%), Speech and behavioural

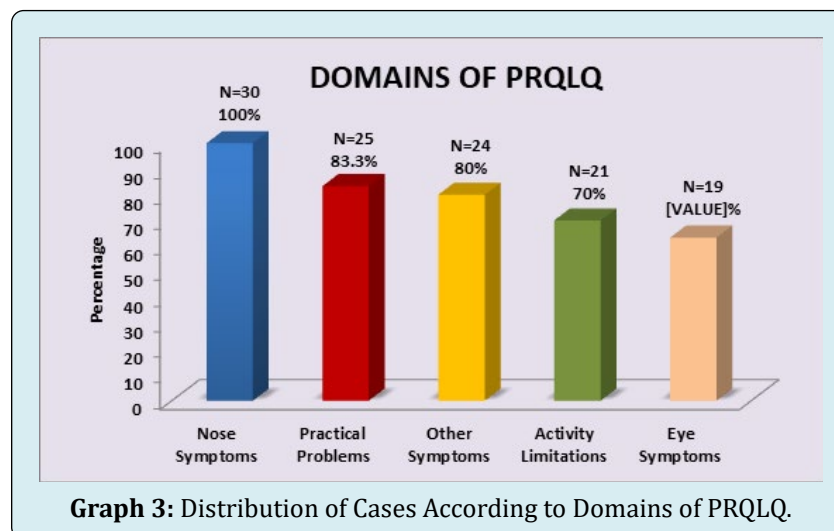
abnormalities in 5(16.7%) children. Allergic conjunctivitis and dermatitis in 6(20%) each, Malnutrition featured in 10(33.3%) cases (Table 2).

Comorbidities	N	%
Asthma	27	90
Post Nasal drip	22	73.3
Pharyngo-tonsillitis	12	40
Undernourished	10	33.3
Allergic Dermatitis (Eczema)	6	20
Allergic Conjunctivitis	6	20
Behavioural Abnormalities	5	16.7
Speech Abnormalities	5	16.7
Hypernasality	1	3.3
Otitis Media	1	3.3

Table 2: Distribution of Cases According to Comorbidities.

Cases were distributed according to the 5 domains of PRQLQ into Nose symptoms 30(100%), Eye symptoms 19(63.3%), other symptoms 24(80%), Practical problems

25(83.3%), and Activity limitations 21(70%) respectively (Graph 3).



Graph 3: Distribution of Cases According to Domains of PRQLQ.

Mean range of nose symptoms was between 3.3-3.5, eye symptoms was 1.2-2.1, practical problems was 0.5-3.3, other

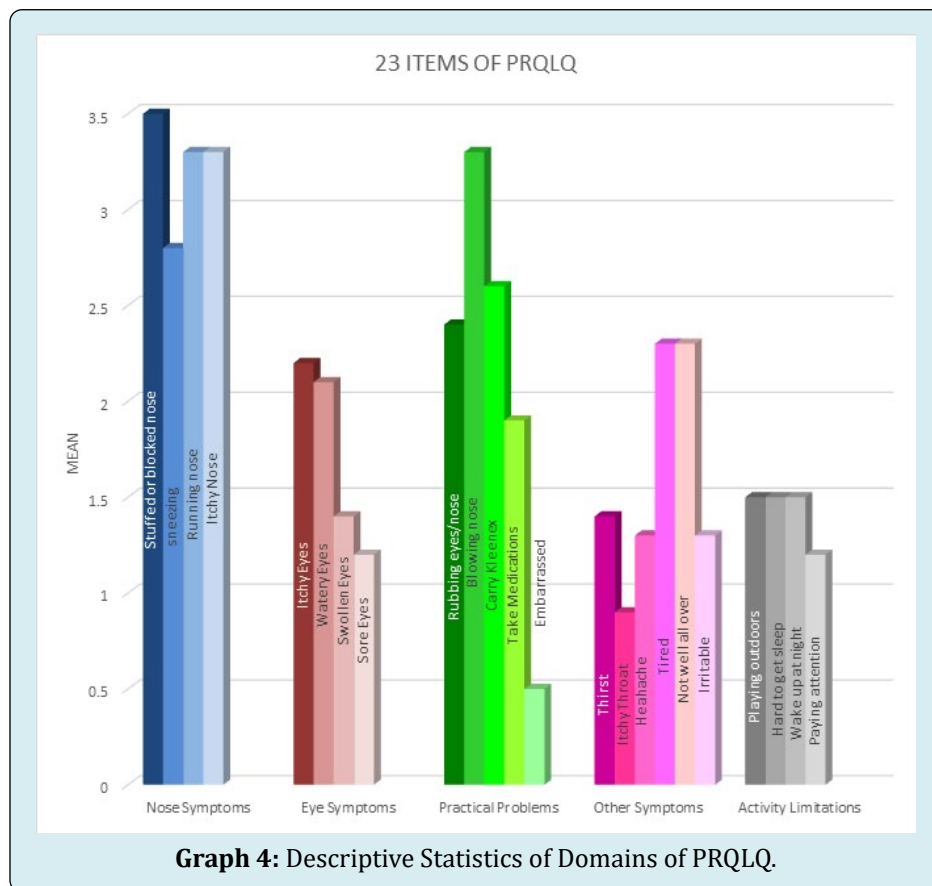
symptoms was 0.9-2.3 and activity limitations was 1.2-1.5 (Table 3).

Descriptive Statistics		Range	Mean	SD
Nose Symptoms	Stuffy/Blocked Nose	0-6	3.5	1.9
	Sneezing	0-6	2.8	2.1
	Runny Nose	0-6	3.3	2
	Itchy Nose	0-6	3.3	2.2
Eye Symptoms	Itchy Eyes	0-6	2.2	2.4
	Watery Eyes	0-6	2.1	2.3
	Swollen/Puffy Eyes	0-6	1.4	2.2
	Sore Eyes	0-6	1.2	2.2

Practical Problems	Rub your Eye/Nose	0-6	2.4	2.2
	Blow your nose	0-6	3.3	2
	Carry Kleenex	0-6	2.6	1.9
	Take Medication	0-6	1.9	1.4
	Embarrassed	0-6	0.5	1
Other Symptoms	Thirst	0-6	1.4	1.3
	Scratchy and Itchy Throat	0-6	0.9	1.3
	Headache	0-6	1.3	1.8
	Tired	0-6	2.3	1.4
	Not well all over	0-6	2.3	1.4
	Irritable	0-6	1.3	1.4
Activity Limitations	Playing Outdoors	0-6	1.5	1.4
	Hard to get to sleep	0-6	1.5	1.7
	Wake up during the night	0-6	1.5	1.7
	Hard to pay attention	0-6	1.2	1.5

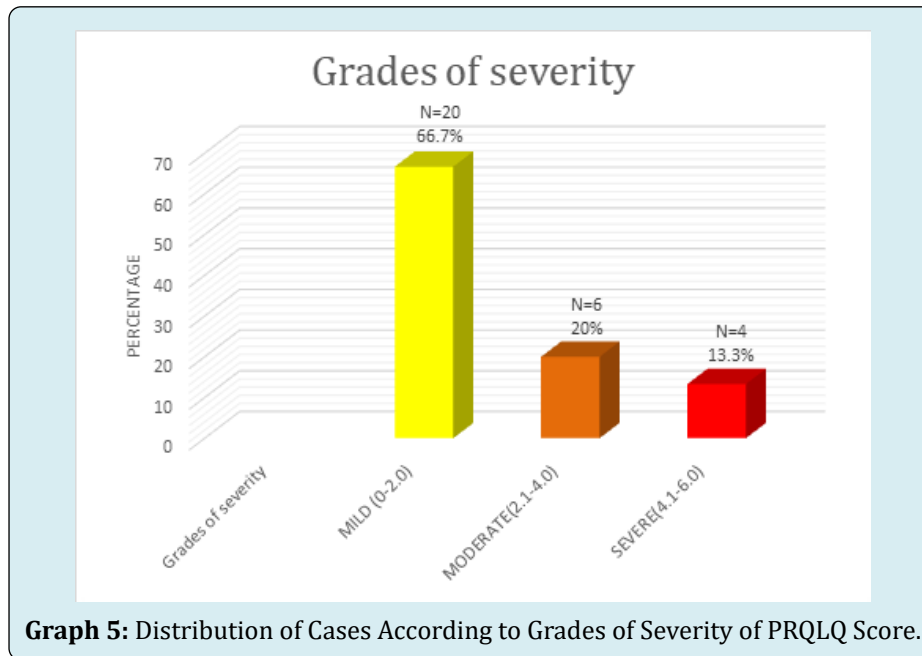
Table 3: Descriptive Statistics of Domains of PRQLQ.

The descriptive statistics of domains of PRQLQ has been shown in Graph 4.



Children were classified according to severity of PRQLQ; 20(66.7%) cases were in the mild category, 6(20%)

and 4(13.3%) were in the moderate and severe category respectively (Graph 5).



Association of PRQLQ domains and grades of severity showed nose symptoms being affected in all 30 (100%) patients and majority of them had mild degree of affection i.e, 20 (66.7%).

Discussion

The family history was directly proportional to the grade of AR and Asthma severity. The entity of cough variant rhinitis has been proposed as it primarily results from post nasal drip. Cough featured in (90%) of the subjects in our study followed by sneezing, rhinorrhoea and nose block. A similar study has highlighted cough as an important symptom in children with AR and Asthma [4]. In a cross-sectional study rhinorrhoea was the most common manifestation followed by itchy nose, nasal congestion and watery eyes [8,9]. Nasal congestion was however seen as the most common symptom in another study [10]. Chronic cough should be detected as a symptom of AR and Asthma and treated appropriately for steroid- sparing effect. Nevertheless, another contradictory study reported nasal congestion to be the most common symptom of the disease [10]. Our study revealed allergic shiners as the most common finding followed by DNS and ITH. Day time somnolence increased school absenteeism and led to diminished school performance. Similar observations were noted in other studies [11].

Asthma was the most common comorbidity observed in our study. A similar observation was reported which

revealed that AR and Asthma control were directly proportional to each other [12]. Another interesting study showed AR findings in 58% of asthmatic children; however no association was established with asthma severity [13]. The other noteworthy co-morbidities were Post nasal drip, Pharyngotonsillitis, Speech and behavioural abnormalities, allergic conjunctivitis and dermatitis. The domains of PRQLQ highlighted majorly the nose symptoms in children.

Similar findings were noted in two Indian studies and a study conducted in western Iran [8,11,12]. The positive aspects of the domains of PRQLQ across age groups revealed mild affection.

Conclusion

Rhino-conjunctivitis quality of life would be an adjuvant and enhance management of patients with AR and Asthma. It should be incorporated in the history taking and therapeutic management as a clinical assessment tool. The questionnaire by Juniper EF, et al. would serve as a validated method for assessing PRQLQ in the paediatric age group.

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