

A Study of Impact of Allergic Rhinitis on Quality of Life of People in Western U.P.

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Abstract

Background: Background: Allergic rhinitis is an ailment affecting 0.8 to 39.7% of the global inhabitants. Nasal congestion is the most bothering symptom of allergic rhinitis. Upper respiratory tract is most affected by this long-lasting ailment. The troublesome nature of AR symptoms severely affects daily life activities such as working ability, examination performance, life's quality and psychosocial comfort. **Subjects and Methods:** The present cross-sectional study was conducted among 120 patients regardless of their age and gender who presented in the ENT department at Teerthanker Mahaveer Hospital and Research Centre, Moradabad with AR. Detailed history was taken followed by complete ENT examination. Quality of life was assessed using "Nocturnal Rhino-conjunctivitis Quality of Life Questionnaire". Questionnaire was given to the patient to elicit impression of AR on quality of life and scoring was done according to questionnaire. **Results:** 62.5% and 37.5% of the subjects were male and female respectively. According to NRQLQ, most affected domain was of practical problems (3.97) viz. 'have to avoid symptom triggers' (dust, cigarette smoke, strong smells and perfumes), 'need to rub nose or eyes' & 'have to take medication'. QoL was lesser in subjects having ear, pharynx, larynx and eye related findings/complaints as compared to subjects without ear, pharynx, larynx and eye related complaints. $p < 0.01$ which is statistically significant in our study. **Conclusion:** There is significant effect of symptoms of AR on quality of life of subjects. Diagnosing AR early and implementing better therapeutic measures can impressively improve condition of subjects of AR.

Keywords: Quality of Life, Nocturnal Rhino-conjunctivitis, Allergic Rhinitis.

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Introduction

The term Allergic Rhinitis (AR) is described as inflammatory alterations in the mucosa of nose occurring by contact with allergens. A.R. is an ailment affecting 0.8 to 39.7% of the global inhabitants.^[1] Approximately 43% of A.R. is 'seasonal' and 56% is 'perennial'. Seasonal allergies are known to get worse during the spring and fall. The most common symptom experienced by the patient of AR during the months which are worst for nasal allergies is congestion of nose. Nasal congestion is the most bothering symptom of allergic rhinitis.^[2] Clinically, rhinitis is defined as having 2 or more symptoms of anterior or posterior nasal discharge, sneezing, blockage of nose and/or nasal itching during 2 or further successive days for greater than one hour on maximum days.^[3] Every year clinicians notice a great load of AR features (itchy nose, nasal discharge, epiphora, and stuffiness) in the subjects, which results in high treatment expenses.^[4]

Allergic Rhinitis impairs daily activities and has a marked impact on life's quality. Subjects undergo sleeplessness, anguish, troubled regular routine and social affairs.^[5] AR in

students poses problems during school hours like tiredness, grumpiness, and sleepiness because of stuffy nose.^[6,7] Symptoms of AR negatively affects social contact with parents and companions. Due to nasal discharge, stuffiness, and recurrent sternutation, taking part in organized gatherings can cause trouble for child, leading to psychic instability which causes grief, rage, irritation and disengagement.^[5]

"Nocturnal Rhino-conjunctivitis Quality of Life Questionnaire" (NRQLQ) was intended particularly to appraise the conditions which are utmost bothersome to subjects of 'nocturnal allergic rhino-conjunctivitis'.^[8] The characteristics of AR which can't be recognized by questioning about daylight manifestations are revealed by analyses of sleep quality.

There is increasing rate of morbidity in patients of allergic rhinitis. Allergic rhinitis is related with significant comorbidities and health care expenses and has been identified as one of the top 10 reasons for visiting clinics. Cases of allergic ailments are increasing due to increased rate of global urbanization, industrialization and pollution. Hence the present study was planned to analyze the impact

of allergic rhinitis on quality of life of people in a tertiary care center.

Aims and Objectives

- To identify patients with allergic rhinitis presenting in ENT OPD.
- To obtain detailed history from allergic rhinitis patients.
- To examine Nasal, Ocular, Otologic, Pharyngeal and Laryngeal signs & symptoms of allergic rhinitis.
- To evaluate the effect of allergic rhinitis on quality of life based on the standard “Nocturnal Rhino-conjunctivitis Quality of Life Questionnaire.”
- To correlate the Nasal, Ocular, Otologic, Pharyngeal and Laryngeal signs & symptoms of allergic rhinitis with “Nocturnal Rhino-conjunctivitis Quality of Life Questionnaire.”
- To analyze the results in detail.

Subjects and Methods

Source of data

- The patients regardless of their age and gender who presented in the ENT department at “Teerthanker Mahaveer Hospital and Research Centre”, Moradabad with allergic rhinitis were taken up for the study.
- The patients regardless of their age and gender who attended the public health camps organized by “Teerthanker Mahaveer Hospital and Research Centre”, Moradabad with allergic rhinitis were taken up for the study.

Sample size: Sample size was calculated to be 120.

Type of study: It is a cross sectional type of study.

Duration of study: 18 months from the date of clearance received from

Ethical Committee: Subjects were taken up on the basis of following inclusion and exclusion

Criteria:

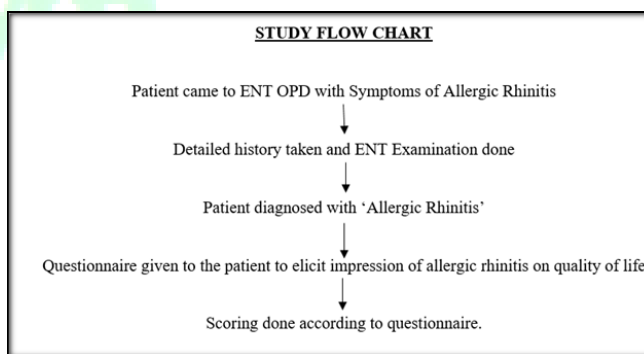
Inclusion Criteria: All the subjects diagnosed clinically with allergic rhinitis and given consent for the study.

Exclusion Criteria: Patients already underwent surgery for rhinosinusitis and patients who didn't give consent for the study.

Interpretation: All items were weighted equally. Mean score was calculated across all items within each domain. Overall score was the mean across all items. Higher scores reflect lower quality of life. (0-6 rating scale with 0 = Not troubled, 1 = Hardly troubled at all, 2 = Somewhat troubled, 3 = Moderately troubled, 4 = Quite a bit troubled, 5 = Very troubled, 6 = Extremely troubled).

Methods of collection of data:

- Detailed history was taken followed by complete ENT examination.
- Questionnaire (“Nocturnal Rhino-conjunctivitis Quality of Life Questionnaire”)8 attached below was given to the patient to elicit impact of allergic rhinitis on quality of life.



Data was collected and subjected to statistical analysis. Data was analyzed using SPSS software version 24.

Results

Out of 120 subjects, 62.5% and 37.5% of the subjects were male and female respectively. Hence there were more males as compared to females. Maximum subjects were from age group of 21-30 years (44.17%) followed by 11-20 (22.50%) and 31-40 years (15.83%). Equal distribution of different age groups w.r.t. male and female were found in our study [Table 1].

Table 1: Age distribution among the study participants according to gender

Age Group (in years)	N	%	Male		Female	
			N	%	N	%
7-10	4	3.33	3	4	1	2.22
11-20	27	22.50	14	18.67	13	28.89
21-30	53	44.17	32	42.67	21	46.67
31-40	19	15.83	12	16.00	7	15.56
41-50	12	10.00	11	14.67	1	2.22
51-60	3	2.50	1	1.33	2	4.44
>60	2	1.67	2	2.67	0	0.00
Total	120	100	75	100.00	45	100.00

Approximately 2/3rd of the subjects in our study live in urban area (70%) while only 30% live in rural area (30%). Occupation viz. desk job, field work, housework and students were found in 24.2%, 20.0%, 22.5% and 33.3% of the subjects respectively. Combining all the domains, 11.7%, 17.5%, 25% and 23.3% of the subjects were extremely troubled, very troubled, quite a bit troubled and moderately troubled respectively which

reflects lower quality of life.

According to NRQLQ, most affected domain was of “practical problems” (3.97) viz. ‘have to avoid symptom triggers’ (dust, cigarette smoke, strong smells and perfumes), ‘need to rub nose or eyes’ & ‘have to take medication’. The second most affected domain was of “symptoms on waking in the morning” viz. ‘feel tired & unrefreshed’, ‘nasal congestion or stuffy nose’, ‘congestion in the sinuses’ & ‘takes time to clear night time drainage after waking up’ with mean score of 3.61. The least affected domain was of “sleep time problems” [Table 2].

QoL in subjects having ear as well as pharynx related findings/complaints was lesser as compared to subjects without ear and pharynx related complaints with statistically significant difference as $p < 0.01$ [Table 3].

QoL in subjects having larynx as well as eye related findings/complaints was lesser as compared to subjects without eye and larynx related complaints with statistically significant difference as $p < 0.01$ [Table 4].

Table 2: Scoring of QoL

QoL	Minimum	Maximum	Mean	SD
Score of Sleep Problems	0	6	3.35	1.351
Score of Sleep Time Problems	1	6	3.18	1.270
Score of Symptoms On Waking In The Morning	0	6	3.61	1.519
Score of Practical Problems	1	6	3.97	1.396
Overall Mean Score	1	6	3.70	1.351

Table 3: QoL according to any ear and/or pharynx related finding/complaint

Any Ear related finding		Score of “Sleep Problems”	Score of “Sleep Time Problems”	Score of “Symptoms On Waking In The Morning”	Score of “Practical Problems”	Overall Score
No	Mean	1.88	2.03	2.03	2.53	2.22
	SD	.907	.999	.999	1.047	.792
Yes	Mean	3.89	3.60	4.18	4.49	4.24
	SD	1.055	1.088	1.246	1.114	1.083
t test		91.55	50.98	77.12	74.74	93.02
p value		<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
Any Pharynx related finding						
No	Mean	2.46	2.30	2.54	2.93	2.69
	SD	.923	.882	1.026	.998	.827
Yes	Mean	4.27	4.10	4.71	5.03	4.75
	SD	1.080	.904	1.099	.830	.921
t test		97.82	125.78	125.17	156.51	165.93
p value		<0.01*	<0.01*	<0.01*	<0.01*	<0.01*

*: statistically significant

Table 4: QoL according to any larynx and/or eye related finding/complaint

Any Larynx related finding		Score of “Sleep Problems”	Score of “Sleep Time Problems”	Score of “Symptoms On Waking In The Morning”	Score of “Practical Problems”	Overall Score
No	Mean	2.79	2.65	2.98	3.42	3.12
	SD	1.097	1.026	1.265	1.222	1.078
Yes	Mean	4.76	4.53	5.21	5.35	5.18
	SD	.781	.706	.729	.646	.673
t test		91.57	95.69	93.07	76.47	107.26
p value		<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
Any Eye related finding						
No	Mean	2.78	2.57	2.90	3.33	3.02
	SD	1.111	.956	1.213	1.155	.981
Yes	Mean	4.58	4.50	5.13	5.34	5.16
	SD	.948	.762	.844	.708	.754
t test		74.34	119.04	104.59	98.01	140.88
p value		<0.01*	<0.01*	<0.01*	<0.01*	<0.01*

Discussion

Unlike other ailments in which the target of their management is avoiding mortality & future morbidity, improving subject's well-being & quality of life is the target of management of allergic rhinitis. Though, till now, the management of AR is focused on alleviating symptoms without giving attention to subject's well-being and how it is affected. For last 3 decades, there has been a growing trend towards evaluating the impact of allergic rhinitis on the quality of life of subjects.^[9] The objectives of the study were to examine nasal, ocular, otologic, pharyngeal and laryngeal signs and to find their correlation with standard "Nocturnal Rhino-conjunctivitis Quality of Life Questionnaire."

Out of 120 subjects, 62.5% and 37.5% of the subjects were male and female respectively. Hence there were more males as compared to females. In an analysis done by Hubert Chen et al,^[10] 37% of the subjects were females & 63% were males, which is consistent with our study. Rasoul Nasiri Kalmarzi et al,^[11] in their study showed that there were more females (61%) as compared to males (39%) which is in contrast to our study. This can be due to variance in study population and study area.

Max. cases were of 21 to 30 years (44.17%) followed by 11 to 20 (22.50%) & 31 to 40 years (15.83%) of age. Equal distribution of different age groups w.r.t. male and female was found in our study. Maha M. Elkholy et al,^[12] in their study revealed that subjects were significantly younger. Average age among the subjects was "29±10.17" years as mentioned by Rasoul Nasiri Kalmarzi et al,^[11] in their study. This is approximately similar to our study.

Approximately 2/3rd of the subjects in our study live in urban area (70%) while only 30% live in rural area (30%). Occupation viz. desk job, field work, housework and students were found in 24.2%, 20.0%, 22.5% and 33.3% of the subjects respectively. Hence maximum subjects were students and this might be due to the fact that in our study max. cases were of "21-30" years of age.

According to NRQOLQ, most affected domain was of "practical problems" (3.97) viz. have to avoid symptom triggers (like dust, cigarette smoke, strong smells and perfumes), need to rub nose or eyes & have to take medication. The second most affected domain was of "symptoms on waking in the morning" viz. feel tired & unrefreshed, nasal congestion or stuffy nose, congestion in the sinuses & takes time to clear night time drainage after waking up with mean score of 3.61. 15.8%, 25%, 20% and 20% of the subjects were 'extremely troubled', 'very troubled', 'quite a bit troubled' and 'moderately troubled', respectively from domain i.e. "practical problems". Combining all the domains, 11.7%, 17.5%, 25% and 23.3% of the subjects were 'extremely troubled', 'very troubled', 'quite a bit troubled' and 'moderately troubled' respectively in this study, which reflects lower quality of life.

Leynaert et al,^[13] in their study showed that subjects with allergic rhinitis had lower life's quality as compared to controls. Similarly Kalmarzi et al,^[11] in their study reported

that life's quality was minimally disrupted in 38% & most disrupted in 62% of subjects. Life's quality was remarkably lesser in subjects with severe intermittent atopic rhinitis. They also revealed that life's quality had been affected by troubles because of AR like sleeplessness, morning symptoms, and practical problems during wake time. In researches done by Shariat et al,^[14] Hubert Chen et al,^[10] and Monico Mit et al,^[15] > 60% of the subjects got affected by sleep problems & problems when awake.

Long concluded that 49% of those participated in the study said that their allergic rhinitis symptoms were nastiest at daybreak. Among the subcategory participants, who noticed manifestations when awake, 80% felt less spirited, 77% more exhausted, 75% less interested & 74% more short-tempered than usual.^[16]

Complaint of inadequate sleep was very common among the subjects of allergic rhinitis that led to poor quality of life. In a study involving nearly five thousand patients of allergic rhinitis, subjects who regularly had symptoms at night, reported usual snoring, persistent daytime sleepiness, & long-standing nonrestorative sleep.^[17]

Allergic Rhinitis is associated with school absenteeism. In our study it was concluded that symptoms at offices led to reduction in productivity of work. This is because of the sleeplessness owing to A.R. manifestations that lead to lethargy, inattentiveness, cognitive effects & worsening daily routine. According to A. Roger et al,^[18] reduction in productivity of work and academics was around 21%. The affected subjects were unable to accomplish well in their jobs & trainings. Their academic relationships & career advancement had been hampered.

In a study done by De la Hoz Caballer et al,^[19] it was found out that allergic rhinitis led to 26.8% total loss in work productivity. A population survey was done in North California to evaluate comparative work loss & reduction in productivity in a period of four weeks of allergic rhinitis and the results revealed a comparable loss of work productivity of 23%.^[20]

Ear related findings/complaints were revealed in 73.3% of the study participants. Pharynx related findings/complaints were revealed in 50.8% of the study participants. Larynx related findings/complaints were revealed in 28.3% of the study participants. Eye related findings/complaints were found in 31.7% of the study participants. QOL was lesser in subjects having ear, pharynx, larynx and eye related findings/complaints as compared to subjects without ear, pharynx, larynx and eye related complaints with $p < 0.01$ which is statistically significant in our study. Shariat et al,^[14] reported congestion of nose as the typical presentation and said that there is association between congestion of nose and life's quality impairment. In a study done by Kalmarzi et al,^[11] there was no noteworthy connection of life's quality with symptoms like nasal congestion, itchy nose and nasal discharge ($p > 0.05$).

The inconsistency in results could be due to the variance in the type of rhinitis observed, as permanent rhinitis affects the subject's life's quality > intermittent rhinitis.

Conclusion

Symptoms of Allergic rhinitis can markedly affect Quality of Life. A.R. predisposes subjects to comorbidities, leading to further deterioration of QoL. As there is significant effect of the symptoms of A.R. over life's quality of subjects, diagnosing A.R. early is primary step in course of minimizing negative impact of AR. Afterwards focus should be on minimizing contact with pollens, smoke, dust particles, fumes etc. and taking actions to lower the incidence of associated ailments, like asthma and sinusitis. Hence medical practitioners have to keep in mind the negative impact of Allergic Rhinitis over Quality of Life & follow therapeutic measures which deliver harmless & effective means for control of A.R. Diagnosing allergic rhinitis early and implementing better therapeutic measures can impressively improve condition of subjects of allergic rhinitis.

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