

Impact of Allergic Rhinitis on Quality of Life among Young Adults

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Abstract

Allergic rhinitis, a condition affecting the nasal passages, profoundly influences the quality of life (QOL) of young adults, extending far beyond its typical symptoms. Its impact encompasses physical health, social interactions, and emotional well-being. The condition's global prevalence is on the rise due to shifting lifestyles and environmental influences. While symptoms like nasal congestion, sneezing, and itching are recognizable, their effects extend to disrupting sleep patterns, causing fatigue, and hindering daily activities. When coupled with comorbid conditions such as asthma, allergic rhinitis significantly exacerbates its impact on individuals' lives. Various studies have shed light on different facets of this condition. Some research has highlighted the effectiveness of pharmacotherapy in alleviating symptoms and improving QOL, while others have noted gender-based differences in prevalence and symptom manifestation. In line with these observations, this research endeavours to comprehensively evaluate how allergic rhinitis impacts the QOL of young adults. Employing a meticulously designed methodology involving extensive socio-demographic data collection and analysis across four primary QOL domains—physical health, psychological well-being, social relationships, and environmental conditions—the study aims to unravel the multidimensional effects of this condition. The findings from this research underscore the urgent need for interventions that go beyond addressing mere symptoms. A holistic approach is crucial, addressing the physical, psychological, and social dimensions affected by allergic rhinitis. Implementing multifaceted interventions could significantly alleviate the burden faced by young adults grappling with this condition, thereby enhancing their overall QOL.

Introduction

Allergic rhinitis, a common chronic condition affecting the nasal passages, presents a myriad of symptoms that extend far beyond mere nasal congestion, sneezing, and itching. Among young adults, this condition significantly impacts not only their physical health but also their broader quality of life, influencing social interactions, emotional well-being, and academic or professional pursuits. It is a widespread and often underestimated chronic condition that profoundly impacts the health and well-being of individuals across the globe. This global health concern affects people of all ages, races, and socioeconomic backgrounds, with its prevalence steadily on the rise, making it one of the most common chronic diseases worldwide (**Bousquet et al., 2003, 2010**). The prevalence of allergic rhinitis exhibits substantial regional variations, ranging from 10% to 40% of the world's population. Recent epidemiological data has revealed

a troubling trend of increasing incidence, attributable to a multitude of factors including urbanization, shifts in lifestyle, and environmental influences such as air pollution and allergen exposure (**Sánchez-Borges et al., 2020**). In India, where 20 to 30% of the population grapples with allergy disorders, the precise prevalence of allergic rhinitis remains unknown (**John et al., 2023**). The hallmark symptoms of allergic rhinitis, encompassing nasal congestion, rhinorrhea, sneezing, and nasal itching, often result in discomfort and inconvenience. However, the consequences of these symptoms stretch further, causing sleep disturbances, fatigue, and impairments in cognitive function, thereby affecting daily activities and productivity. Moreover, the association between allergic rhinitis and comorbid conditions, such as asthma and sinusitis, amplifies its impact on the health and well-being of young adults (**Choi, 2021**). The underlying causes and triggers of allergic rhinitis is pivotal in comprehending its pervasive influence. Allergens, ranging from pollen and dust mites to animal dander and certain foods, serve as primary triggers, inciting an immune response that leads to the characteristic symptoms. Genetic predisposition and environmental factors also play intricate roles in the development and exacerbation of allergic rhinitis, contributing to its complexity and variability among individuals (**Chandrika, 2017**). While the symptoms of allergic rhinitis are recognizable, a comprehensive assessment through physical examination is indispensable for accurate diagnosis and management. Clinical evaluation, including a detailed examination of the nasal passages, identification of allergic triggers, skin and assessment of potential complications, aids in devising tailored treatment strategies and mitigating the impact of this condition on young adults' lives. The prevalence of allergic rhinitis among young adults has soared in recent years, with studies suggesting a substantial rise in its incidence, the physical symptoms are evident, and the invisible burdens borne by individuals navigating allergic rhinitis are often overlooked. The detrimental effects on social interactions, emotional well-being, academic or professional endeavours, and overall quality of life underscore the urgency of understanding the holistic impact of this condition. Therefore, the study aims to shed light on the overall quality of life including its physical health, psychological health, social relationships and environment conditions.

Statement of the problem

The prevalence of allergic rhinitis among young adults is rising globally, yet the full extent of its impact on their quality of life remains inadequately understood. This study seeks to investigate the specific ways in which allergic rhinitis affects the physical, psychological, and social well-being of young adults,

Objective

To study young adults diagnosed with allergic rhinitis on quality of life among young adults.

Literature Review

Patel et al. (2023) conducted an observational study to assess the quality of life in patients with Allergic Rhinitis (AR) in a tertiary healthcare centre in South Gujarat with the objective to measure the quality of life (QOL) of allergic rhinitis patients using the RSDI Score before receiving treatment and to measure the effect of pharmacotherapy on QOL in AR patients. The study included 38 patients and was conducted at the Department of Ear, Nose, and Throat

(ENT), Government Medical College & New Civil Hospital, Surat, South Gujarat, between September 2019 and September 2020. Patients with AR, aged 18 years or older, who were receiving treatment, were included in the study. A convenient sampling method was employed to collect the sample and relevant data. The collected data were statistically evaluated using R statistical software version 4.0.2. A paired t-test was applied to detect the statistical significance of changes in Visual Analog Scale (VAS) and Rhinosinusitis Disability Index (RSDI) scores before and after treatment, thereby assessing the impact of various drugs on QOL. The Standardized Response Mean (SRM) was also measured to gauge the responsiveness of scales (VAS and RSDI) to clinical changes. A higher SRM indicates better responsiveness of the scales to clinical improvements. The observations made in the study were found to be statistically significant. It was determined that Allergic Rhinitis (AR) does indeed have a significant impact on the quality of life (QOL) of affected individuals. Furthermore, pharmacotherapy, which includes treatments like oral antihistamines alone or in combination with local decongestants or leukotriene receptor antagonists (LTRA) in intermittent AR (IAR) cases, and intranasal corticosteroids (INCS) along with oral antihistamines in persistent AR (PAR) cases, were found to be significantly effective in controlling symptom scores and improving QOL.

Beyuo et al. (2022) aimed to investigate the impact of allergic rhinitis on the quality of life of affected patients. The study utilized a qualitative approach, purposefully selecting patients diagnosed with allergic rhinitis at a referral center. Face-to-face interviews were conducted using an interview guide with prompts, and the data were analyzed through thematic analysis. The study focused on patients who reported to a referral center with allergic rhinitis that had an impact on asthma (ARiA) over a 42-day period. This research took place at the only tertiary healthcare facility in the region, serving Ghana's middle zone. The findings of the study revealed that allergic rhinitis is a significant but often neglected health problem in Ghana, frequently under recognized and under reported. Patients diagnosed with allergic rhinitis experience a range of troublesome signs and symptoms that have a negative impact on their quality of life. The study also revealed that patients experienced symptoms upon exposure to allergy triggers, affecting both physical and psychological dimensions of their quality of life. These symptoms included poor concentration, sleep disturbances, and emotional disturbances. The allergy triggers were often from the patients' environments, prompting them to take measures to avoid or protect themselves to minimize the frequency of allergic reactions. The findings, also including issues like labeling and strained family relationships, underscore the need for psychosocial counseling and support for individuals suffering from allergic rhinitis.

Widuri and Hidayat (2022) A cross-sectional observational analysis design was adopted to investigate the gender-based differences in the prevalence of allergic rhinitis (AR) among adults. The study involved medical students enrolled in the College of Medicine at the University of Muhammadiyah Yogyakarta. Participant selection was performed using a proportionate stratified random sampling method, categorizing them into two groups based on their gender, namely male and female. Data were collected through the administration of the Score For Allergic Rhinitis (SFAR) questionnaire, which was distributed to respondents via Google Forms. Shapiro-Wilk was employed as the statistical method for assessing data normality, and the contingency coefficient test was used to evaluate the relationship between

variables. The findings revealed notable gender-based disparities in the prevalence of allergic rhinitis. Among the female participants, the prevalence of allergic rhinitis was 23.9%, while in the male group, it was 8.7%. Statistical analysis confirmed a significant difference in the prevalence of AR between males and females, with a p-value of 0.028. The study also explored the prevalence of allergic rhinitis in different age groups. Notably, the highest prevalence of allergic rhinitis was observed in the 21-year age group. Furthermore, the research identified gender-specific variations in the symptoms of allergic rhinitis. In males, nasal congestion emerged as the most common symptom, whereas in females, a runny nose was the predominant complaint.

Chaouki et al. (2020) conducted a prospective cohort study with the primary objective of evaluating the Quality of Life (QoL) of patients suffering from Allergic Rhinitis (AR) and assessing the extent of improvement following treatment with nasal corticotherapy. The study spanned from June 2019 to February 2020 and relied on the validated Arabic version of the Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ). The study included a total of 70 patients with an average age of 35-40 years. Methodology included assessment of quality of life before and after three months of treatment with "Budesonide." It was found patients with allergic rhinitis had negative impact on their quality of life before treatment and elevated symptoms. After treatment significant improvements were noted specifically in Physical activities, Nasal symptoms, Eye symptoms, General problems and Emotional state. The study concludes that the RQLQ is a reliable tool for assessing the quality of life of allergic rhinitis patients. It underscores the negative impact of AR on the daily lives of patients and highlights the effectiveness of nasal corticosteroid treatment in improving their quality of life.

Komnos et al. (2019) conducted a case-control study to investigate the prospective effect of allergic rhinitis on the quality of life in affected individuals. The aim of this study was to assess the impact of allergic rhinitis on the quality of life of patients. The study included 103 patients (50 males and 53 females) with a mean age of 30.8 ± 13.4 years, ranging from 18 to 55 years. These patients were diagnosed with allergic rhinitis using skin prick testing. Quality of life was evaluated using the General Health Questionnaire-28, the Athens Insomnia Scale (AIS), and the mini Rhinoconjunctivitis Quality of Life Questionnaire. Additionally, 50 participants who had no history of allergic symptoms during the past 12 months formed the control group. The study compared various parameters related to the quality of life between patients with allergic rhinitis and the control group. Independent sample t-tests were used to assess significant differences between the two groups in terms of quality of life. Data analysis was performed using the Windows statistical package of SPSS version 18.0 (SPSS Inc., Chicago, IL, USA) statistical significance was set at 0.05. The findings suggest that dust mite, mixed grass, and pollens were the most common allergens found in patients with allergic rhinitis. Patients with allergic rhinitis exhibited statistically worse results in physical and social activities, as well as in quality of sleep and nasal or other symptoms, in comparison to the healthy control group. However, there were no statistically significant differences in terms of anxiety and severe depression between the two groups. The study concluded that allergic rhinitis had a negative impact on the quality of life of affected individuals, particularly in areas related to psychosocial activities and sleep. This impact on quality of life could affect daily living.

Kalmarzi et al. (2017) conducted a study with an objective to assess the impact of allergic rhinitis on the quality of life in Western Iran. The study involved 146 subjects, HealthRelated Quality of Life (HRQOL) questionnaire was employed as the primary assessment tool. The collected data was analyzed using the Statistical Package for the Social Sciences (SPSS). The findings of the study revealed that allergic rhinitis had a significant impact on various aspects of the subjects' lives, including their overall quality of life, sleep patterns, mood, and daily life activities.

Methodology

Study Design: The present study has been completed by following the descriptive method of research.

Data Source: This study includes information gathered from both primary sources and secondary sources.

Primary Source: The current research was carried out in a hospital based setting. The respondents were selected from two specialized hospitals, namely Sheri-Kashmir-Institute of Medical Sciences, Soura Srinagar (SKIMS) Department of Allergy and immunology and Jawaharlal National Memorial Hospital Rainawari Srinagar (JLNM) Department of ENT. Additionally, patients from two private clinics, namely Kawoosa Chest Clinic and Day Care Center Qamarwari, Srinagar and Kashmir Institute of Allergy and Sleep Sciences Karan Nagar Srinagar, were also included in the sample. A standardized assessment WHOQOLBREF tool was employed after obtaining consent from the relevant institution, and a questionnaire was created to gather information from the chosen sample.

Secondary Source: The study utilized various sources, such as books, published or unpublished dissertations, medical and public health journals, online sources, and websites, to gather secondary data.

Sample Size: The current research involved the participation of 500 individuals diagnosed with Allergic Rhinitis, encompassing both males and females within the age range of 20-40 years. Individuals over the age of 40 were excluded from the study. The participants were chosen through a purposive sampling approach, which involves selecting individuals who meet specific criteria in a random manner. The sample size was determined based on the estimated prevalence of the disease, employing a formula to ensure an appropriate representation of the population.

Sampling Procedure: Both Government hospitals and Private clinics having Allergy and Immunology department situated in Srinagar district were selected for data collection. A total of 500 confirmed case of allergic rhinitis both males and females in the age group of 20 to 40 years who visited the hospitals/clinics were identified and selected by purposive random sampling method. An internationally well standardized questionnaire was used to elicit the information pertaining to socioeconomic background, and four domains namely Physical domain, psychological domain, social relationship and Environment conditions. Also a selfdesigned questionnaire to know the various coping strategies adopted by the subjects to overcome allergies was employed. The data was recorded after receiving the consent form the selected adult subjects. Patients who do not give the consent were excluded from the study.

List of Hospitals and Clinics selected for data collection

Government Hospitals/ Private Clinics	No. of respondents
Sheri-Kashmir-Institute of Medical Sciences, Soura Srinagar (SKIMS)	100
Jawaharlal National Memorial Hospital Rainawari Srinagar (JLNM)	90
Kawoosa Chest Clinic and Day Care Center, Qamarwari Srinagar	170
Kashmir Institute of Allergy and Sleep Sciences Karan Nagar Srinagar	140

Data Collection Tools:

- a) (Quality of Life Scale, The World Health Organization Quality of Life-BREF (WHOQOL-BREF), developed by Dr. John Orley in 1996, has been used to assess the participants' quality of life. This scale comprises four domains: physical health, psychological health, social relationships, and environment. The scale has been validated and widely used in various cultural settings.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)	0.848
Bartlett's Test of Sphericity Approx. Chi-Square	3318.947
Df	325
Sig.	.000

Reliability of WHOQOL-BREF

Domains	Reliability
Physical domain	0.72
Psychological domain	0.72
Social Relationships	0.72
Environment conditions	0.75
Overall	0.82

Statistical analysis

After coding, the data was analysed using SPSS version 25 further more frequencies and percentage, Pearson's correlation regression analysis and t-test were used as statistical tools.

ETHICAL CONSIDERATIONS: Ethical clearance certificate was obtained from the UT of Jammu and Kashmir, Institutional Ethics Committee, Sheri-Kashmir Institute of Medical Sciences Srinagar (SIMS131/IEC-SKIMS/2022).

Table: 1 Socio demographic characteristics of respondents as per gender n= (500)

		Gender					
		Male		Female		Total	%
		N	%	n	%		
Residence	Urban	40	23.8%	102	30.7%	142	28.4
	Rural	128	76.42%	230	69.1%	358	71.6
Income	No income	50	29.8%	273	82.2%	323	64.6
	Upto-10000	23	13.7%	24	7.2%	47	9.4
	10000-50000	72	42.9%	31	9.3%	103	20.6
	50000-1lac	23	13.1%	4	0.9%	27	5.4
Age (in years)	20-25	56	33.3%	99	29.8%	155	31.0
	25-30	34	20.2%	111	33.4%	145	29.0
	30-35	30	17.9%	46	13.9%	76	15.2
	35-40	48	28.6%	76	22.9%	124	24.8
Qualification	Illiterate	4	2.4%	35	10.5%	39	78.0
	Primary School	29	17.3%	67	20.2%	96	19.2

	Secondary School	35	20.8%	51	15.4%	86	17.2
	Tertiary	100	59.5%	179	53.9%	279	55.8
Marital Status	Single	92	54.8%	181	54.5%	273	54.6
	Married	74	44.0%	144	43.4%	218	43.6
	Divorced	2	1.2%	4	1.2%	6	1.2
	Widowed	0	0.0%	3	0.9%	3	0.6
Occupation	Student	47	28.0%	110	33.1%	157	31.4
	Part time Job	5	3.0%	4	1.2%	9	1.8
	House-wife	3	1.8%	166	50.0%	169	33.8
	Private job	11	6.5%	9	2.7%	20	4.0
	Govt..Job	42	25.0%	23	6.9%	65	13.0
	Business	45	26.8%	10	3.0%	55	11.0
	Daily wager	15	8.9%	10	3.0%	25	5.0

Table 2: Distribution of the respondents on the four domains of Quality of Life

Physical health	N	%
Low	122	24.4
Moderate		
High	230	46.0
Sub Total	148	29.6
	500	100
Psychological Health		
Low	100	20.0
Moderate		
High	263	52.6
Sub Total	137	27.4
	500	100

Social relationships			
Low	38	7.6	
Moderate			
High	423	84.6	
Sub Total	39	7.8	
	500	100	
Environment conditions			
Low	132	26.4	
Moderate			
High	263	52.6	
Sub Total	105	21.0	
	500	100	

Table 3: Correlation of four domains of quality of life

		Physical health	Psychological health	Social relationships	Environment conditions
Physical health	Pearson Correlation				
	Sig. (2-tailed)	1	0.656**	0.001	0.007
			0.000	0.000	0.000
					0.354**
Psychological health	Pearson Correlation		1	0.134**	
	Sig. (2-tailed)			0.000	0.000

Social relationships	Pearson Correlation	1	0.160
	Sig. (2-tailed)		0.000
Environment domain	Pearson Correlation		1
	Sig. (2-tailed)		

** Correlation is significant at the 0.01 level (2-tailed).

Table 4: Descriptive statistics for domains of quality of life

	M	SD
Physical health	11.91	2.45
Psychological health	12.60	2.57
Social relationships	12.81	2.93

Environment conditions	13.92	1.97
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M=Mean

SD=Standard deviation

Table 5: Paired t-test of four domains of Quality of life

Paired Domains	Mean difference	t	p value
Physical health- Psychological health	0.69	7.40	<0.01
Physical health – Social relationships	0.90	5.67	<0.01
Physical health – Environment conditions	2.01	17.64	<0.01
Psychological health- Social relationships	0.21	1.39	<0.01
Psychological health - Environment conditions	1.31	11.04	<0.01
Social relationships - Environment conditions	1.10	7.21	<0.01

Table 6: Regression coefficients of the domains of Quality of life

Domains		Unstandardized coefficient		Standardized Beta	t	p
		β	St.error	B		
Physical Health	Psychological Health	0.62	0.03	0.65	19.30	<0.01

Social Relationships	Environment Conditions	0.93	0.06	0.06	1.40	0.56
Physical Health	Environment Conditions	0.21	0.38	0.24	8.45	<0.01
Social Relationships	Psychological Health	0.44	0.52	0.35	5.72	<0.01

Results and discussion

The study encompassed a sample size of 500 respondents, representing various sociodemographic profiles. The distribution across gender revealed a higher prevalence of female participants in both urban (30.7%) and rural (69.1%) settings. A substantial proportion reported no income (64.6%), while smaller percentages fell within income brackets of up to 10000 (9.4%), 10000-50000 (20.6%), and 50000-1lac (5.4%). The distribution across age groups indicated a substantial representation within the 20-25 (31.0%) and 25-30 (29.0%) brackets. Varied educational backgrounds were observed, with a majority holding tertiary qualifications (55.8%). Marital status was predominantly divided between single (54.6%) and married (43.6%) individuals, while occupation encompassed diverse categories such as students (31.4%), housewives (33.8%), and those engaged in private and government jobs, businesses, and daily wage work.

The result of the present study goes in line with the study conducted by **Linda Tizek et al; (2022)**. The findings revealed that majority of the subjects were females with mean age of 1655 years.

Analysis across the four domains of quality of life revealed a diverse distribution among respondents. Physical health was reported as low by 24.4%, moderate by 46.0%, and high by 29.6% of respondents. Psychological health was rated as low by 20.0%, moderate by 52.6%, and high by 27.4%. Social relationships were perceived as low by 7.6%, moderate by 84.6%, and high by 7.8%. Regarding environmental conditions, 26.4% had low scores, 52.6% had moderate scores, and 21.0% scored high.

The results of the present study coincides with the study of **Sharma and Singh (2019)**.The findings indicated that allergic rhinitis impacts quality of life (QOL), effect learning outcomes , work productivity and sleep. The results of the present study also harmonize with the findings of **Seghall et al; (2010)**.The findings suggested that there is a possible relationship between allergies, anxiety and mood swings. Another study by **Marshall et al. (2002)** reveals that allergies may contribute to fatigue and depressive feelings. Similarly, higher amount of anxiety and depression is seen in patients with allergic rhinitis as compared to the controls studied by

Barajas et al. (2016). According to Nathan's study (2007), allergic rhinitis patients have emotional effects such as irritability and embarrassment. The findings of the present study go in contrast with the results of **Cingi et.al (2015)**. The results revealed that allergic rhinitis impacts social communication and behaviours of the patients. Nathan (2007), in a study revealed that as a chronic disease, allergic rhinitis has a major impact on social engagement and quality of life. The findings of the present study go in line with the study of **Castro et al; (2013)**. The results revealed that house dust mite and improper sanitation was responsible for the increase in allergy. **Wang et al; (2005)** in another similar study found that indoor responses to bacterial products and HDM (house dust mites) play a crucial role in development of allergens in natural environment.

The correlation analysis among the quality of life domains unveiled significant associations. Strong positive correlations were found between physical health and psychological health ($r = 0.656, p < 0.01$) and between psychological health and social relationships ($r = 0.354, p < 0.01$). However, weaker correlations were observed between social relationships and both physical health ($r = 0.160, p < 0.01$) and environmental conditions ($r = 0.134, p < 0.01$). **Han and Kim (2016)** concluded that persistent or severe allergic rhinitis was correlated with poor mental health.

Descriptive statistics provided mean and standard deviation values for each quality of life domain: physical health ($M=11.91, SD=2.45$), psychological health ($M=12.60, SD=2.57$), social relationships ($M=12.81, SD=2.93$), and environment conditions ($M=13.92, SD=1.97$).

The paired t-test unveiled significant differences between different domains of quality of life ($p < 0.01$). Additionally, the regression analysis demonstrated substantial relationships between specific domains, such as the strong association between physical health and psychological health ($\beta=0.65, p < 0.01$).

Conclusion

The comprehensive exploration of socio-demographic characteristics, quality of life domains, and their interrelationships provides invaluable insights into the complex nature of allergic rhinitis. The observed impact across various facets of life underscores the need for tailored interventions and support systems that account for the diverse experiences of affected individuals. The correlation between physical health, psychological well-being, and social relationships highlights the interconnectedness of these domains. Strengthening one aspect may positively influence others, thereby enhancing overall quality of life for individuals grappling with allergic rhinitis. In conclusion, this study contributes to the growing body of literature by elucidating the multifaceted impact of allergic rhinitis on the quality of life among young adults. The findings underscore the urgency of holistic interventions that encompass physical, psychological, and social dimensions to alleviate the burden faced by individuals affected by allergic rhinitis.

Implications and Recommendations

The implications of these findings extend beyond the research scope, calling for targeted interventions aimed at enhancing the quality of life for individuals affected by allergic rhinitis. Healthcare policies and strategies need to incorporate a multidimensional approach, addressing

not only the physical symptoms but also the psychological, social, and environmental factors that contribute to the overall well-being of affected individuals.

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