

Quality of Life of Children Patients with Allergic Rhinitis

Dr. Shaima Hussein Alwan¹, Dr. Osama Jaralla Muhammad², and Dr. Ali Sattar Nasir³

¹M.B.Ch.B., F.I.C.M.S. \ (Paediatric), Iraqi Ministry of Health, Diyala Health Directorate, Al-Batool Teaching Hospital for paediatric and Gynaecology, Diyala, Iraq

²M.B.Ch.B., C.A.B.P. \ (Paediatrics), Iraqi Ministry of Health, Baghdad Al-Rusafa Health Directorate, Al_Zafarania General Hospital, Baghdad, Iraq

³M.B.Ch.B., C.A.B.P. \ (Paediatrics), Iraqi Ministry of Health, Baghdad Al-Rusafa Health Directorate, Ibn Al-Baldi Hospital for Paediatric and Gynaecology, Baghdad, Iraq

Abstract: Background: Allergic rhinitis is a chronic condition in children, and there's evidence that an increasing percentage of children with allergies have AR. **Objective:** The aim of this study was the assessment and analysis of clinical quality of life outcomes in patients with allergic rhinitis. **Patients and methods:** 90 children with allergic rhinitis participated in the study. The children were asked to rate their rhinitis symptoms using two scales: the Total 4 Symptom Score and the Visual Analogue Scale. Quality of life was assessed using the KINDL-R questionnaire. **Results** The study found that children over 12 years old had the highest number of cases of asthma, accounting for 50% of the total. The most common comorbidities were asthma and food allergies. Symptoms were sneezing, stuffy nose, and rhinorrhea. Family history was identified in 36.67% of cases, while pollen and dust mites were identified in 16.67% and 1%, respectively. Common factors affecting children included pet dander, air pollution, cigarette smoke, respiratory infections, certain foods, weather changes, and hormonal fluctuations. Complications affected children at 55.56%, with sinusitis, decreased quality of life, and asthma exacerbations being the most common impact factors. The severity of symptoms was classified into mild, moderate, and severe categories, where mild (9 patients), moderate (24 cases), and severe (57 cases). **Conclusion:** Allergic rhinitis (AR) significantly impacts children's quality of life, causing symptoms like nasal congestion, sneezing, itching, and rhinorrhea. These symptoms can hinder daily activities and reduce life quality.

Keywords: Allergic rhinitis; Children; QoL scale; Risk factors; and Complications.

INTRODUCTION

Allergic rhinitis, or AR, is a prevalent chronic illness in the paediatric population. A considerable proportion of children are affected by this condition [Brożek, J. L. *et al.*, 2017]. The incidence of the condition is still on the rise, with a significant proportion of children affected. The prevalence of allergic rhinitis (AR) in children aged 6–7 years is estimated to be between 4.2 and 12.7%, while in children aged 13–14 years, the prevalence is reported to range from 1 to 45.1% [Ait-Khaled, N. *et al.*, 2009].

According to the outcomes of the ECAP (Epidemiology of Allergic Diseases in Poland) survey that was carried out in Poland, AR that had been diagnosed by a physician could be diagnosed among 24.4% of the children aged 6 to 7 years, as well as 30.9% of the teenagers who were in the age group of 13-14 years. Adolescents often do not inform their physicians about their health problems, which can result in them seeking for treatments whenever they notice signs of disease manifestations [Samoliński, B. *et al.*, 2009].

An important subject matter in medical research these days is assessment on life worth living. The poor state of light in breathing-related diseases among infants within Poland remains unknown

from available publication documents. Be that as it may, symptoms connected with this condition do affect their daily functioning as far as performing day-[Greiner, A. N. *et al.*, 2011]. Children with AR may experience difficulties in school, including fatigue, irritability, and sleep disturbances due to nasal congestion. Furthermore, AR symptoms can impede social interactions with parents and peers [Meltzer, E. O. *et al.*, 2009].

Children with AR who experience nasal congestion, rhinorrhea, and frequent sneezing may have difficulty attending family or social gatherings. This gives rise to psychological problems, which result in sadness, anger, frustration, and withdrawal [Everhart, R. S. *et al.*, 2014]. An essential part of a child's life-influenced assessment is the chance to directly ask children and then compare their viewpoint with that of a parent. In a study done with healthy kids, it was found out that parents have a tendency to overrate the quality of their offspring's life in comparison with assessments given by kids themselves [Jozefiak, T. *et al.*, 2008 – Ravens-Sieberer, U. *et al.*, 2001]

Besides the data derived from the parental reports, it is imperative to consider children's own views

about their well-being. The quality of life can be influenced by the place of living. Various researches show that children living in rural areas experience a better quality of life as opposed to those dwelling in urban settings [Ravens-Sieberer, U. et al., 2000 – Reiner, B. et al., 2018]

PATIENTS AND METHODS

This study employed a cross-sectional methodology to investigate the prevalence of allergic rhinitis in a cohort of 90 paediatric patients, comprising both sexes and aged between 2 and 15 years. The data were collected from outpatient clinics in different hospitals in Iraq. The study collected demographic and clinical data for the patients, including age, gender, body mass index (BMI), classified into underweight, normal weight, overweight, obesity, comorbidities, and data related to the parents, including educational level, marital status, and monthly income.

With regard to diagnostic data, this study recorded diagnostic data for paediatric patients, which identified the symptoms prevalent in the patients. These included sneezing, nasal congestion, runny nose, itchy nose, watery eyes, and postnasal drip. Furthermore, the study recorded the types of

allergens to which the children were exposed, which consisted of (family history and vaccine). These allergens included dust mites, pet dander, air pollution, cigarette smoke, respiratory infections, certain foods, changes in weather, and hormonal fluctuations.

Furthermore, the severity of pervasive allergic rhinitis symptoms in children was rated using the TNSS scale, which typically ranges from zero to twelve, with higher scores indicating more pronounced symptoms. This study also recorded the complication rate in pediatric patients over an extended period. Furthermore, this study evaluated patients' quality of life using the KINDL-R questionnaire, which ranges from 0 to 100. A score of 0 represents poor quality of life, while a score of 100 represents optimal quality of life. Quality of life criteria include good physical well-being, emotional well-being, self-esteem, family and friends, and school. We conducted an analysis to identify the risk factors that affect children's long-term health-related quality of life. The clinical data of paediatric patients was measured and determined using the SPSS program, version 22.0.

RESULTS

Table 1: Clinical and demographic characteristics

Characteristics	Frequency [90]	Percentage [%]
<i>Age, years N [%]</i>		
< 8	18	20%
9 – 12	27	30%
> 12	45	50%
<i>Gender, N [%]</i>		
Male	54	60%
Female	36	40%
<i>BMI, [kg/m²]</i>		
Underweight	5	5.56%
Normal weight	36	40.0%
Overweight	14	15.56%
Obesity	35	38.89%
<i>Comorbidities, N [%]</i>		
Hypertension	13	14.44%
Diabetes	33	36.67%
Asthma	56	62.22%
HIV	14	15.56%
Food allergies	35	38.89%
Eustachian tube dysfunction	6	6.67%
Parents characteristics		
<i>Smoking status</i>		
Yes	50	55.56%
No	40	44.44%
Marital status		
Married	65	72.22%

Divorced	22	24.44%
Widow	3	3.33%
Parents education		
Not in the school	7	7.78%
Primary	8	8.89%
Secondary	12	13.33%
College/university	63	70.0%
Parents income		
< 800	23	25.56%
800 – 1100	32	35.56%
> 1100	35	38.89%

Table 2: Determine the diagnostic findings of children patients with allergic rhinitis

Variables	Frequency [90]	Percentage [%]
Symptoms, N [%]		
Sneezing	27	30.0%
Stuffy Nose	19	21.11%
Rhinorrhea	16	17.78%
Itchy Nose	5	5.56%
Watery Eyes	4	4.44%
Postnasal Drip	2	2.22%
Fatigue	17	18.89%
Exposure to allergens		
Family history		
Yes	33	36.67%
No	57	63.33%
Pollen		
Yes	15	16.67%
No	75	83.33%
Dust mites		
Yes	9	10.0%
No	81	90.0%
Pet dander		
Yes	6	6.67%
No	84	93.33%
Air pollution		
Yes	55	61.11%
No	35	38.89%
Cigarette smoke		
Yes	34	37.78%
No	56	62.22%
Respiratory infections		
Yes	7	7.78%
No	83	92.22%
Certain foods		
Yes	17	18.89%
No	73	81.11%
Changes in weather		
Yes	37	41.11%
No	53	58.89%
Hormonal fluctuations		
Yes	3	3.33%
No	87	96.67%

Table 3: Classified severity of allergic rhinitis symptoms which prevalence in the children using TNSS scale

Scores	Number of patients [90]	Percentage [%]
Mild [0 – 4]	9	10.0%
Moderate [5 – 8]	24	26.67%
Severe [9 – 12]	57	63.33%

Table 4: Identification of complications related to children's patients with allergic rhinitis

Complications	Number of patients [90]	Percentage [%]
Sinusitis	18	20.0%
Asthma exacerbations	8	8.89%
Nasal polyps	4	4.44%
Sleep disturbances	6	6.67%
Decreased quality of life	14	15.56%
Total	50	55.56%

Table 5: Children's assessment of quality of life using the KINDL-R questionnaire

Items	QoL scores
Physical Well-Being	67.55 ± 15.77
Emotional Well-Being	48.82 ± 12.35
Self-Esteem	46.65 ± 14.56
Family	36.89 ± 15.85
Friends	25.64 ± 16.34
School	47.75 ± 15.34

Table 6: Determine risk factors which impact on children's patients with allergic rhinitis

Risk factors	OR	CI 95%
Ages [> 12]	2.43	0.78 – 6.68
Sex [males]	3.56	1.25 – 7.74
Family history of allergies	5.35	2.66 – 6.64
Obesity	4.23	2.10 – 9.50
Asthma	1.10	0.40 – 3.11
Sneezing	1.87	1.13 – 3.54
Stuffy Nose	3.87	2.44 – 5.46
Air pollution	6.92	4.27 – 9.88
Cigarette smoke	4.22	2.70 – 6.65
Changes in weather	3.88	2.67 – 5.68
Sinusitis	2.44	1.65 – 5.37

DISCUSSION

The study revealed that the highest percentage of cases was observed in children over the age of 12, with 50% of the total number of cases. This was followed by children between the ages of 9 and 12, with 30% of the cases, and children under the age of 9, with 20% of the cases. There was a higher incidence of cases in males, with 54 patients, compared to females, with 36 patients. A total of 36 patients were classified as underweight, 36 as normal weight, 14 as overweight, and 35 as obese. The most prevalent comorbidities in children were asthma (56 cases) and food allergies (35 cases).

The prevalence of symptoms in children was determined by diagnostic outcomes. The most prevalent symptoms were sneezing (27 cases),

stuffy nose (19 cases), and rhinorrhea (16 cases). Family history was identified in 36.67% of cases, while pollen and dust mites were identified in 16.67% and 1% of cases, respectively. The prevalence of symptoms in children was found to be as follows: 0.0% for pet dander, 6.67% for air pollution, 61.11% for cigarette smoke, 7.78% for respiratory infections, 18.89% for certain foods, 41.11% for changes in weather, and 3.33% for hormonal fluctuations.

Furthermore, we determined the rate of complications affecting children, which was found to be 55.56%. The most common impact factors were sinusitis (18 cases), decreased quality of life (14 cases), and asthma exacerbations (8 cases). In addition, we classified the severity of symptoms

into three categories: mild (9 patients), moderate (24 cases), and severe (57 cases). The quality of life of children was also evaluated. The most negative factors included friends (25.64 ± 16.34), school (47.75 ± 15.34), family (36.89 ± 15.85), and self-esteem (46.65 ± 14.56).

Children patients' quality of life is largely affected by allergic rhinitis, which is popularly referred to as hay fever. Symptoms like sneezing, itching, nasal congestion, and runny nose are irritating and interfere with day-to-day activities [Villalonga-Olives, E. *et al.*, 2015 – Meyer, M. *et al.*, 2016]. This may lead to tiredness, irritability, and poor concentration in children with allergic rhinitis due to an impact it has on both their productivity as well as general health issues. [Upton, P. *et al.*, 2008]

Moreover, children with allergic rhinitis need to manage this condition that affects their quality of life. At night, congestion in the nasal airways or nighttime symptoms may increase these problems, making a person feel fatigued during the day as well as resulting in poor sleep quality due to frustration, anxiety, or depression, all of which are associated with allergic rhinitis [Sheffler, L. C. *et al.*, 2009; Ravens-Sieberer, U. *et al.*, 2001]. Because of these signs, some children may find it difficult to work or complete their household chores due to lack of energy and difficulty relaxing in bed, as well as reduced performance. Or even in everyday tasks, causing fatigue after prolonged periods of such activities [Chen, B. Y. *et al.*, 2012]. It also damages their mind, leading to anger due to high mental effects. Besides, children often feel ashamed especially when their problems [Bousquet, P. J. *et al.*, 2009]. In addition, children who have AR may experience difficulties as they struggle to control the illness, including locating treatment that works and coping with financial obligations related to healthcare. Consequently, it renders their chance of living well under constant distress even more remote. [Demoly, P. *et al.*, 2013; Ciprandi, G. *et al.*, 2007]

Healthcare professionals dealing with patients suffering from AR must take into account the specific needs and difficulties of female patients suffering from AR in order to provide comprehensive care that touches on both the physical and emotional aspects of this condition, which can only alleviate them if possible, ensuring that they live a little more comfortably than before, as well as being able to manage their may improve their quality of life. [Bousquet, P. J. *et al.*, 2007]

CONCLUSION

Children who are suffering from allergic rhinitis (AR) can have their quality of life significantly affected. AR patients can often experience some symptoms, such as nasal congestion, sneezing, itching, and rhinorrhea. These symptoms can be disturbing, hinder the children's daily activities, and thus reduce their life quality. Additionally, children who are suffering from AR may also encounter obstacles in the control of their condition, such as searching for alternative therapy that works best and coping with medical bills they cannot afford.

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Source of support: Nil;

Conflict of interest: Nil.

Cite this article as:

Alwan, S.H., Muhammad, O.J. and Nasir, A.S. "Quality of Life of Children Patients with Allergic Rhinitis." *Sarcouncil Journal of Medical Series* 3.5 (2024): pp 24-29.