

Allergic Rhinitis Profile in Medical Faculty of Mataram University Students

I Gusti Ayu Putu Wahyu Widiyanti¹, Anak Agung Ngurah Manik Adityaswara²

¹Medical Faculty, Mataram University
Gekwahyu[at]gmail.com

²Medical Faculty, Mataram University
gungmanik94[at]gmail.com

Abstract: **Backgrounds:** Allergic rhinitis (AR) is the most common disease of all allergic diseases worldwide. One symptom of AR that is particularly disturbing for 90% of patients is nasal congestion. Allergic rhinitis was not a critical illness but it could affect patients' quality of life. Thus, it must be treated properly. **Objective:** This study was conducted to assess allergic rhinitis profile in students of the Faculty of Medicine, Mataram University. **Methods:** This study is a descriptive study with subjects, namely students of the Faculty of Medicine, Mataram University, who have qualified the inclusion and exclusion criteria. Collecting data using the google form application by filling out questionnaires including identity, sign and symptom, and the Total Nasal Symptom Score (TNSS) questionnaires for assessing the severity of allergic rhinitis. Data analysis was performed using the Microsoft Excel. **Results:** The total subjects were 50 students. Of the 50 people, 28 were female (56%) and 22 male (44%). Sneezing is the main symptom and allergic salute is the common sign in this study. Based on TNSS, about 15 people (30%) had got mild allergic rhinitis, 23 people (46%) and 12 people (24%) had got moderate and severe allergic rhinitis respectively. **Conclusion:** Women are the largest distributor of respondents (56%). Based on the age distribution, the largest number of respondents came from the age of 21. Based on the distribution of symptoms, the most prominent symptom of allergic rhinitis was repeated sneezing 5 times a day and the most common sign in this study was the allergic salute. Then, the highest grade of allergic rhinitis based on TNSS was moderate, which was 46%.

Keywords: allergic, rhinitis, profile, medical, student

1. Introductions

Allergic rhinitis (AR) is the most common of all allergic diseases and affects an estimated 400 - 600 million people worldwide. Allergic rhinitis is now a worldwide concern because of its increasing prevalence and morbidity. This disease is influenced by various factors such as genetics, environment, and air pollution. It is estimated that 10 - 20% of the world's population suffers from allergic rhinitis with different amounts in each country. The prevalence of allergic rhinitis in developed countries tends to be higher than in developing countries, such as in the UK it reaches 29%, in Denmark, it is 31.5%, and in America, it is around 33.6%. Meanwhile, the prevalence in developing countries such as North America is only 10-20%, Thailand is around 20% and Japan is 10%. The prevalence of allergic rhinitis in Indonesia alone reaches 1.5-12.4% and tends to increase every year. [1, 2].

Allergic rhinitis is not life-threatening but severe symptoms can affect a person's health because this upper airway disease is recurrent, chronic, progressive, and irreversible at an advanced stage. Furthermore, the severity of AR symptoms can be measured based on the Total Nasal Symptom Score (TNSS) in the form of all nasal symptoms, namely sneezing, runny nose, congestion, itching, and symptoms outside the nose such as itchy, red, watery eyes, itching in the ears, palate, and throat. [3-5]

One of the AR symptoms that is very disturbing for 90% of patients is nasal congestion, this symptom is often related to sleep problems experienced by AR sufferers. Allergic

rhinitis and other ocular symptoms also play a role in waking the patient up. In a recent survey of 2,355 people with ar in the United States, nasal congestion affected more than 80% of respondents at night by causing them to wake up or make it difficult to sleep. Nasal congestion increases in the supine position so that it can affect the quality of life. [6,7]. Based on this description, the authors were interested in conducting research on the profile of allergic rhinitis in students of the Faculty of Medicine, University of Mataram. The parameters studied were gender, age, signs and symptoms of allergic rhinitis, and the degree of allergic rhinitis as assessed by the Total Nasal Symptom Score (TNSS).

2. Methods and Materials

The design of this study is a descriptive study with a prospective cross-sectional approach. The sample including students of the Faculty of Medicine, Mataram University, who have qualified the inclusion and exclusion criteria.

Inclusion criteria

- Age 17-25 years old.
- Student who had allergic rhinitis signs and symptoms.

Exclusion criteria

- Student who had nasal polyp.
- Student who did not want to participate and fill the questionnaire.

Collecting data using the google form application by filling out questionnaires including identity, sign and symptom, and the Total Nasal Symptom Score (TNSS) questionnaires for assessing the severity of allergic rhinitis. The data obtained

were processed manually by Microsoft Excel, analyzed in a descriptive method, and presented in narrative and table.

3. Results

3.1 Patient demographics

There were 50 students who participate in this study, with female counted 28 people (56 %) and male about 22 people (44%). Most respondent were 21 years old for 12 people (24%). The distribution of the gender and age can be seen in Table [1] and [2] respectively.

Table 1: Respondent distribution based on gender

Gender	Frequency	Percentage (%)
Male	22	44
Female	28	56
Total	50	100

Table 2: Respondent distribution based on age

Age (years old)	Frequency	Percentage (%)
18	3	6
19	5	10
20	7	14
21	12	24
22	7	14
23	7	14
24	9	18
Total	50	100

3.2 Clinical signs and symptoms

The most common symptoms in our study was sneezing more than 5 times per day counted as 41 people (82%). The other symptoms were runny nose (6%) and itchy nose (2%). In addition, allergic salute became the major clinical signs of allergic rhinitis about 26 people (52%), the other clinical sign was both of the allergic salute and allergic shiner for 10 people (20%). Table [3] and [4] depicts the clinical signs and symptoms in this study.

3.3 Allergic rhinitis severity

Based on TNSS evaluation, in our study there were 15 people (30%) having mild allergic rhinitis, 23 people (46%) having moderate allergic rhinitis and 12 people (24%) suffering severe allergic rhinitis. These severity of allergic rhinitis were described in Table [5].

Table 3: Distribution of symptoms

Symptoms	Frequency	Percentage (%)
Sneezing >5 times per day	41	82
Runny nose	3	6
Nasal itching	1	2
Runny and nasal itching	5	10
Total	50	100

Table 4: Distribution of signs

Signs	Frequency	Percentage (%)
Allergic salute	26	52
Allergic salute and Allergic crease	1	2
Allergic salute and cobblestone appearance	1	2
Allergic salute and Geographic	1	2

tounge		
Allergic shiner	5	10
Allergic shiner and Allergic crease	1	2
Allergic shiner and Allergic salute	10	20
Allergic shiner , Allergic salute and Allergic crease	2	4
Allergic shiner, Allergic salute and cobblestone appearance	1	2
Allergic shiner, Allergic salute and Face adenoid	1	2
Allergic shiner, Allergic salute and Geographic tounge	1	2
Total	50	100

Table 5: Distribution of allergic rhinitis severity based on TNSS

Severity	Frequency	Percentage (%)
Mild	15	30
Moderate	23	46
Severe	12	24
Total	50	100

4. Discussions

This study used an age range of 18-24 years with the most respondents coming from the age of 21, namely as many as 12 people (24%) of the total respondents. In this study, it was found that the majority of respondents were female as many as 28 people (56%) and male as many as 22 people (44%). This is in line with the research conducted by Denny Satria Utama (2010) in Semarang, that out of 74 people suffering from rhinitis, 54.1% were women while 45.9% were men.[8] This is also supported by research by Susanti et al. in 2016, with the distribution of the most allergic rhinitis sufferers being women, namely 37 patients (75.51%), and only 12 men (24.49%).[9]

Based on the age distribution, it was found that the largest number of respondents was 21 years old, namely 12 people (24%). The mean age of onset of allergic rhinitis is 8-11 years, and 80% of allergic rhinitis develops by age 20. The incidence of AR during the reproductive period was found to be higher in women. This is because the female hormone estrogen has an inflammatory effect, whereas the male hormone testosterone has an inflammatory effect. During puberty, higher levels of female sex hormones increase the expression of atopic tendencies in women, whereas male hormones have a protective effect.[2,10,11]

Apart from gender and age, the symptoms and signs of allergic rhinitis were also investigated. A typical symptom of allergic rhinitis is repeated bouts of sneezing.[12,13] Basically sneezing is a normal symptom, especially in the morning or when there is contact with large amounts of dust. Sneezing is considered pathological if it occurs more than 5 times per day as a result of the release of histamine. Other symptoms such as the runny and profuse runny nose, nasal congestion, itchy nose, and eyes, can sometimes be accompanied by a lot of tears or hyperlacrimation.[14,15] In this study, it was also found that the most frequent allergic rhinitis symptoms experienced by respondents were repeated sneezing more than 5 times a day, namely 41 people (82%).

Meanwhile, the most common sign of allergic rhinitis was an allergic salute, which was 26 people (52%).

Based on Allergic Rhinitis and its Impact on Asthma-World Health Organization (ARIA-WHO) 2012, allergic rhinitis is defined as an inflammation of the nasal mucosa in the form of a disorder in the nose triggered by exposure to allergens and mediated by IgE. The degree of allergic rhinitis can be assessed by the TNSS (Total Nasal Symptom Score). This score includes the total number of symptoms found in allergic rhinitis such as nasal itching, sneezing, nasal congestion, rhinorrhea, and post nasal drip.[3,12,16] After completing the TNSS questionnaire, total scores were obtained and grouped according to the degree of allergic rhinitis. In this study, the results showed that out of a total of 50 respondents, 15 (30%) had mild allergic rhinitis, 23 (46%) had moderate degrees and 12 (24%) had severe degrees.

There are several limitations to this study, namely the sample that is not too large and the population is homogeneous. So that further research can be carried out with different research methodologies and more samples. In further research, total IgE or specific IgE tests can be carried out to obtain a more precise and objective allergic rhinitis sample. Besides that, further analysis can also be done about the impact and risk factors for allergic rhinitis.

5. Conclusions

From the results of research on the profile of allergic rhinitis in students of the Faculty of Medicine, University of Mataram, it can be concluded that based on the gender distribution, women are the largest distributor of respondents, namely 56%. Based on the age distribution, the largest number of respondents in this study came from the age of 21, namely 24%. Based on the distribution of symptoms, the most prominent symptom of allergic rhinitis was repeated sneezing 5 times a day, which was 82%. The most common sign in this study was an allergic salute. Then, the highest grade of allergic rhinitis based on TNSS was moderate, which was 46%.

References

- [1] K. A. Subagiarta, W. Hadi, E. Isbandiati, "The Effectiveness Of Saline Nasal Spray Therapy On Changes In Nasal Mucociliary Transport Time In Patient With Allergic Rhinitis," *Journal of Widya Medika Junior*, 1 (2), pp. 53–62, 2009.
- [2] N. Irawati, E. Kasakeyan, N. Rusmono. "Rinitis Alergi," in *Buku Ajar Ilmu Kesehatan Telinga Hidung Tenggorok Kepala & Leher Edisi Ketujuh*, E. A. Soepardi, N. Iskandar, J. Bashiruddin, R. D. Restuti (eds.), Balai Penerbit FK UI, Jakarta, 2010.
- [3] J. Bousquet, *et al.*, "Allergic Rhinitis and its Impact on Asthma (ARIA): Achievements in 10 years and future needs", *Journal of Allergy and Clinical Immunology*, 130(5), pp. 1049–1062, 2012.
- [4] P. A. Brennan, V. Mahadevan, B. T. Evans. *Clinical Head and Neck Anatomy for Surgeons*, 2015.
- [5] P. Van Cauwenberge *et al.* "Global Resources in Allergy (GLORIA): Allergic rhinitis and allergic

conjunctivitis," *Clinical and Experimental Allergy Reviews*, 3(1), pp. 46–50, 2003.

- [6] T. J. Craig, *et al.*, "The correlation between allergic rhinitis and sleep disturbance," *Journal of Allergy and Clinical Immunology*, 114(5 SUPPL.), 2004.
- [7] R. Muñoz-Cano, *et al.*, "Severity of allergic rhinitis impacts sleep and anxiety: Results from a large Spanish cohort," *Clinical and Translational Allergy. BioMed Central*, 8(1), pp. 1–9, 2018.
- [8] D. S. Utama, "The Correlation Between Sensitivity of Aeroallergen with Clinical Allergic Rhinitis Manifestation," *Diponegoro University*, pp. 39 – 40, 2010.
- [9] E. Susanti, D. R. Pawarti, Soeprijadi, "Hubungankadar RANTES sekrethidung dengansorgejala total penderitairinitis alergi," *ORLI*, 46 (2), pp. 1 – 1, 2016.
- [10] Nurjannah, "Faktor Risiko Rinitis Alergi Pada Pasien Rawat Jalan Di Poliklinik THT-KL Rumah Sakit Umum Daerah Zainoel Abidin (RSUDZA) Banda Aceh Tahun 2011," 11(2), pp. 60–65, 2011.
- [11] J. Mullol, M. Maurer, J. Bousquet, "Sleep and allergic rhinitis," *Journal of Investigational Allergology and Clinical Immunology*, 18(6), pp. 415–419, 2008.
- [12] K. Okubo, *et al.*, "Japanese guidelines for allergic rhinitis 2017," *Allergology International. Elsevier B.V.*, 66(2), pp. 205–219, 2017.
- [13] P. Small, P. K. Keith, H. Kim, H. "Allergic rhinitis, Allergy, Asthma and Clinical Immunology," *BioMed Central*, 14(s2), pp. 1–11, 2018.
- [14] Fauzi, M. Sudiro, B. W. Lestari, "Prevalence of Allergic Rhinitis based on World Health Organization (ARIA-WHO) questionnaire among Batch 2010 Students of the Faculty of Medicine Universitas Padjadjaran," *Althea Medical Journal*, 2(4), pp. 620–625, 2015.
- [15] L. Klimek, G. Eggers, "Olfactory dysfunction in allergic rhinitis is related to nasal eosinophilic inflammation," *Journal of Allergy and Clinical Immunology*, 100(2), pp. 158–164, 1997.
- [16] M. Mahmoudi, "Allergy and asthma: Practical diagnosis and management," *Allergy and Asthma: Practical Diagnosis and Management: Second Edition*, pp. 1–689, 2016.

Author Profile



I Gusti Ayu Putu Wahyu Widiyantari received MD degrees in Medical Faculty of Mataram University in 2018.



Anak Agung Ngurah Manik Adityaswara received MD degrees in Medical Faculty of Mataram University in 2018.