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Artikel Penelitian

PREVALENSI DAN KARAKTERISTIK KLINIS RINITIS ALERGI PADA PASIEN ASMA DI INSTALASI GAWAT DARURAT RUMAH SAKIT BHAYANGKARA BRIMOB DI INDONESIA***PREVALENCE AND CLINICAL CHARACTERISTICS OF ALLERGIC RHINITIS AMONG ASTHMATIC PATIENTS IN THE EMERGENCY DEPARTMENT OF A BHAYANGKARA BRIMOB HOSPITAL IN INDONESIA******Mohammad Lukmanul Hakim Winugroho^a, Asri Ragil Kemuning^a, Jetty Rusmajati^a, Desdiani^{a*}***^aFakultas Kedokteran IPB University, Jalan Raya Dramaga, Bogor, Indonesia**Histori Artikel**Diterima:
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Desdiani
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Latar Belakang: Asma dan rinitis alergi sering kali terjadi bersamaan. **Tujuan:** Penelitian ini bertujuan untuk mengidentifikasi karakteristik pasien asma dewasa yang datang ke Instalasi Gawat Darurat (IGD) dan mengalami rinitis alergi pada periode Juni 2023 hingga Desember 2024 di Rumah Sakit Bhayangkara, Kota Depok, Jawa Barat. **Metode:** Studi retrospektif ini menganalisis 144 pasien asma yang mengunjungi IGD. Diagnosis asma bronkial dan rinitis alergi ditegakkan berdasarkan riwayat klinis dan pemeriksaan fisik oleh dokter jaga, serta data rekam medis pasien. **Hasil:** Sebanyak 66,66% pasien memiliki asma dan rinitis alergi secara bersamaan. Mayoritas pasien berjenis kelamin perempuan dan berusia 18–44 tahun. Rontgen dada tidak menunjukkan kelainan bermakna. Riwayat atopi ditemukan pada 46,52% pasien. Sebanyak 74,3% merupakan mantan perokok atau bukan perokok, sementara 25,69% masih merokok. Paparan asap rokok pasif tercatat pada 37,5% pasien, dan 7,63% terpapar bahan bakar biomassa. Sebanyak 88,19% pasien mengalami serangan asma sedang, dan 66,93% di antaranya juga memiliki rinitis alergi. Serangan berat terjadi pada 11,8% pasien, dengan 58,82% di antaranya juga mengalami rinitis alergi. **Kesimpulan:** Tingginya prevalensi rinitis alergi pada pasien asma menunjukkan pentingnya diagnosis dini dan penatalaksanaan yang optimal untuk meningkatkan hasil klinis pasien.

A B S T R A C T

Introduction: Asthma and allergic rhinitis frequently coexist. **Objective:** This study aims to characterize adult asthma patients who visited the emergency department (ED) and had allergic rhinitis between June 2023 and December 2024 at Bhayangkara Hospital, Depok City, West Java. **Methods:** This retrospective study analyzed 144 asthma patients who visited the ED during the specified period. The cohort included 89 females and 55 males. Diagnoses of bronchial Asthma and allergic rhinitis were confirmed through clinical history and physical examination by the attending physician, and all data is obtained from the patient's medical records. **Results:** Among the study population, 66.66% had coexisting asthma and allergic rhinitis. The majority were female and aged between 18 and 44 years. Chest X-rays revealed no significant abnormalities. Asthma prevalence was higher in females (61.8%) than males (38.19%), with a mean age of 32.53 years. A history of atopy, encompassing conditions like eczema, food allergies, and eye inflammation, was prevalent among 46.52% of patients. Smoking habits varied, with 74.3% being ex-smokers or non-smokers, while 25.69% were current smokers. Passive smoke exposure was noted in 37.5%, and 7.63% had exposure to biomass fuel. About 88.19% of emergency patients visits were classified as moderate asthma attacks, with 66.93% of these patients also having allergic rhinitis. Severe asthma attacks occurred in 11.8% of cases, with 58.82% of these patients also suffering from allergic rhinitis. **Conclusions:** The high prevalence of allergic rhinitis among asthma patients emphasizes the necessity of early diagnosis and good management to optimize patient outcomes.

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INTRODUCTION

Rhinitis refers to the inflammation of the nasal mucosa. Among its various forms, allergic rhinitis (AR) is the most prevalent atopic condition, affecting approximately 10%–30% of adults and 40% of children worldwide.^{1,2} It is also the most common type of chronic rhinitis, with evidence indicating a rising prevalence.³ AR significantly impacts health by impairing sleep quality, reducing work productivity, and affecting academic performance. Despite its substantial burden, AR is often underdiagnosed and overlooked by both physicians and patients.⁴ Allergic rhinitis is an inflammatory disorder triggered by an immunoglobulin E (IgE)-mediated response following allergen exposure.⁵ Studies indicate a rising incidence of AR in developing countries.^{6,7} Globally, an estimated 600 million individuals suffer from AR, with approximately 200 million also experiencing bronchial asthma as a concomitant condition.⁶ Despite its high prevalence, AR often remains undiagnosed.⁸

Clinicians diagnose AR by evaluating the patient's medical history and conducting a physical examination, identifying allergic triggers and characteristic symptoms such as nasal congestion, rhinorrhea, nasal itching, or sneezing.⁹ The ARIA (Allergic Rhinitis and Its Impact on Asthma) guidelines classify AR based on disease severity and duration.¹⁰ In Indonesia, national data on the concurrent prevalence of AR and Asthma are currently unavailable. While some small-scale studies have explored their coexistence, comprehensive national data remains lacking.¹¹

Therefore, this study aims to assess the prevalence of AR among asthma patients presenting with acute exacerbations in the emergency department of a hospital in Depok, Indonesia, and to explore the interrelationship between these conditions. A better understanding of this association could improve diagnosis and management strategies for both diseases.

METHOD

This retrospective descriptive study followed the guidelines for Cohort Studies. It examined the medical records of 144 patients diagnosed with asthma attacks who sought treatment at the emergency department (ED) of a hospital in Depok City between June 2023 and December 2024. Data collected included demographic characteristics (age and gender), atopic history, smoking status, exposure to trigger factors (passive smoking and biomass fuel), and asthma severity at the time of the emergency visit. Diagnoses of bronchial Asthma and allergic rhinitis were established based on clinical history and physical examination by the attending physician, and all data is obtained from the patient's medical records. The study received ethical approval from the Bhayangkara Hospital Ethics Committee. Participation was voluntary, and all patients provided written informed consent before inclusion.

RESULTS

Participants Demographics

We analyzed the medical records of 144 asthma patients who visited the emergency department. The clinical and demographic characteristics of the patients are summarized in

Table 1. Among them, 38.19% were male, and 61.8% were female, with a mean age of 32.53 years. Of the total sample ($N=144$), 96 patients (66.66%) had a coexistence of asthma and AR (see Figure 1).

Asthma patients with concurrent allergic rhinitis were more frequent among individuals aged 18-44 years and females compared to those without allergic rhinitis. Despite this, chest X-ray findings remained within normal limits. AR prevalence among asthma patients affected 38.54% of males and 61.45% of females. A history of atopy, including dermatitis, food allergies, and conjunctivitis, was present in 67

out of 144 (46.52%) of patients. Regarding smoking status, 74.3% were ex-smokers or non-smokers, while 25.69% were current smokers. Exposure to environmental triggers was observed in 37.5% of patients for passive smoking and 7.63% for biomass fuel.

As shown in Figure 2, the distribution of asthma severity highlights the proportion of patients with moderate asthma (88.19%) and moderate asthma with concomitant AR (57.64%). Moreover, severe asthma attacks occurred in 11.8% of cases, with 58.82% of these patients also suffering from AR.

Table 1. Patients' Demographics and Clinical Characteristics

Parameter	Category	Frequency (%)
Mean Age of patients (years)		32.53
Gender (Asthma Patients, $N = 144$)	Female	89 (61.8%)
	Male	55 (38.19%)
Age of AR Patients with Asthma ($n = 96$)	18 – 44 years old	52
	45 – 59 years old	22
	≥ 60 years old	22
Gender AR patients with asthma ($n = 96$)	Female	59 (61.45%)
	Male	37 (38.54%)
Patient history of atopy (%)		67 (46.52%)
Smoking Status	Non-smoker and ex-smoker	107 (74.3%)
	Current smoker	37 (25.69%)
Exposure to trigger factors (%)	Passive smoker	54 (37.5%)
	Biomass fuel	11 (7.63%)
Severity of the Asthma (physician's judgment)	Moderate Asthma	127 (88.19%)
	Moderate Asthma with AR	83 (66.93%)
	Severe Asthma	17 (11.8%)
	Severe Asthma with AR	10 (6.94%)

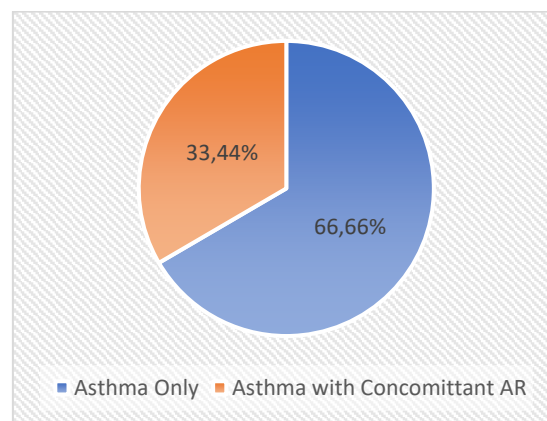


Figure 1. Distribution of Asthma Patients with and without Concomitant Allergic Rhinitis

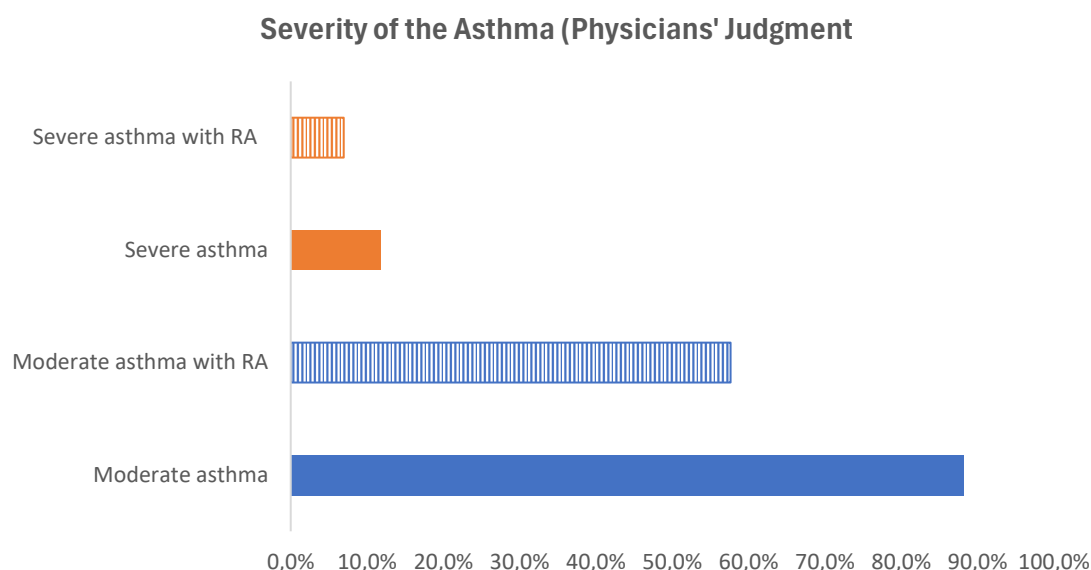


Figure 2. Severity of Asthma Based on Physicians' Judgment

DISCUSSION

Numerous studies have examined the relationship and prevalence of AR among asthma patients, reporting considerable variation. In Europe and the United States, the prevalence of AR in asthma patients has been reported to range from 50% to 100%.¹² Other research in these regions has identified a similarly high prevalence, between 24% and 94%.¹³ Overall, more than half (56.4%) of asthma patients with coexisting AR, rhinosinusitis, or nasal polyps remain uncontrolled.¹⁴ In India, one study documented a strong epidemiological association between AR and asthma, with a prevalence of 65.24% among asthma patients. In our study, data from hospital medical records of asthma patients visiting the emergency department revealed that 38.19% were male and 61.8% were female, with 66.66% having both asthma and AR. This high coexistence may be influenced by environmental

factors and allergy triggers unique to the studied population.¹⁵

Our study found that the mean age of asthma patients was 32.53 years, with the majority being female (61.45%). The coexistence of asthma and AR was more common among females and individuals aged 18 to 44 than their counterparts. Nevertheless, the findings of the chest X-ray were within normal limits. In comparison, a study in Nigeria reported a broader age range of 6 to 99 years, with a mean age of 22.16 years. Approximately 46% of the participants were under 14 years old, and 52% were female.¹⁶ Age has been shown to significantly influence the prevalence of AR among asthma patients, with research indicating a decline in AR prevalence as age increases.^{17,18}

For instance, a study by Matsuno et al. found that 66% of asthma patients under the age of 60 had coexisting AR, compared to only 39% of those over 60 years old.¹⁹ Similarly, a study in

India demonstrated the highest prevalence of AR and asthma coexistence in individuals aged 19 to 44 years, with a notable decline in older age groups, aligning with the findings of Huurre and Matsuno et al.^{19,20} These results highlight the significant role age plays in the prevalence of AR in asthma patients.

This observation may be attributed to the general tendency for rhinitis symptoms to subside over the natural course of chronic airway inflammatory diseases. Alternatively, the increasing severity of asthma with age might lead to less accurate diagnoses of AR.¹⁹ A study in Nigeria also highlighted variations in the prevalence of asthma and AR across age groups, with the highest prevalence observed in adults aged 18 to 45 years.¹⁶

In our study, the prevalence of AR coexisting with asthma was 66.67%, with 38.54% of cases in males and 61.45% in females. This trend aligns with findings from Nigeria, where female asthma patients accounted for 56.52% and males for 43.47%.¹⁶ However, studies in India reported a higher prevalence of coexisting AR and asthma among males compared to females.¹⁵ Similarly, a study conducted in Finland found that the risk of AR was significantly higher in males than in females.²⁰ A study in Indonesia with 185 adult asthma patients revealed 29.2% had allergic rhinitis.²¹

Our findings also revealed that among asthma patients visiting the emergency department, 88.19% experienced moderate asthma attacks, with 66.93% of these patients also having AR. Meanwhile, 11.8% experienced severe asthma attacks, of whom 58.82% had AR.

The high prevalence of coexisting AR and Asthma highlights the critical need for early diagnosis and effective management of AR in asthma patients to improve clinical outcomes.

A study by Jaggi et al. highlighted a significant correlation between AR and asthma severity.¹⁵ The prevalence of AR was higher among patients with moderate asthma (70.31%) and severe asthma (66.94%) compared to those with mild asthma (56.39%). Their findings demonstrated that as asthma severity increased, the prevalence of comorbid AR also rose. Similarly, our study revealed a parallel trend between persistent AR and asthma severity, suggesting that persistent AR may contribute to more severe asthma. Uncontrolled long-term AR has been identified as a critical factor in poor asthma control.¹⁵

Research by Ponte et al. further emphasized the impact of AR severity on asthma outcomes. Patients with moderate to severe AR were 3.8 times more likely to visit the emergency department compared to those without AR and 12.7 times more likely to experience uncontrolled asthma.²² These findings align with the concept that AR and asthma may represent manifestations of a single syndrome affecting different parts of the respiratory system.²³ More severe AR is closely associated with more severe asthma, underscoring the importance of integrated management for both conditions.

Our study revealed that 46.52% of asthma patients had a history of atopy, including dermatitis, food allergies, and conjunctivitis. Regarding smoking status, 74.3% of patients were either ex-smokers or non-smokers, while 25.69% were current smokers. Additionally,

37.5% of patients were exposed to passive smoking, and 7.63% had exposure to biomass fuel.

Several studies have highlighted that allergic sensitization to domestic allergens, aeroallergens, and exposure to trigger factors are significant risk factors for the coexistence of AR and asthma. For instance, the presence of pets and animals in the home was reported to be twice as common among patients with both AR and Asthma. Other research has demonstrated a higher prevalence of AR-asthma comorbidity in individuals sensitized to pollen and animal dander.^{24,25,26}

Study Limitations

Our study has several limitations. Firstly, the diagnosis of asthma was based on a medical record review by a pulmonary specialist and met established diagnostic criteria. However, independent confirmation of these diagnoses was not possible. Secondly, we could not definitively determine if patients with moderate to severe asthma attacks in the emergency department were subsequently admitted to the inpatient ward, as this information relied solely on physician assessments documented in the medical records. Thirdly, this study focused solely on adult patients with moderate to severe asthma requiring emergency department care, excluding those with milder asthma typically managed in outpatient settings. Finally, data on several important factors were unavailable, including pet ownership, specific allergic rhinitis symptoms, and detailed information on oral steroids. Despite these limitations, our study offers valuable insights into the existing

literature on the prevalence of comorbid allergic rhinitis and asthma, particularly within the Indonesian population, where such data remain scarce. A prospective study needs to be conducted that includes a diagnosis of mild asthma with AR, involving factors such as pet ownership, specific allergic symptoms, and previous use of oral steroid medication.

CONCLUSION

This study demonstrates the high prevalence of concurrent AR among asthma patients in a hospital emergency department, with 66.67% of cases observed. Most of these cases were in females and individuals aged 18–44. These findings are consistent with research from other regions, suggesting the role of AR as a significant risk factor for both the development and severity of asthma. Despite the high prevalence and established risk posed by AR, clinical care often focuses primarily on asthma while overlooking AR, leading to delays in appropriate treatment.

Given that chronic AR is linked to more severe asthma, our study highlights the importance of early identification and adherence to guideline-based management to prevent worsening symptoms. Environmental factors, such as passive smoking and exposure to aeroallergens, contribute to the increased frequency and severity of these comorbid conditions. An integrated approach to managing AR and asthma is crucial for improving clinical outcomes in affected patients, by addressing both conditions simultaneously, recognizing their close connection. This approach combines conventional medical treatments with

complementary therapies, lifestyle modifications, and patient education to achieve better symptom control, reduce reliance on medication, and enhance overall well-being.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

All relevant data is available upon reasonable request.

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