Sarcouncil Journal of Medical Sciences

ISSN(Online): 2945-3526

Volume- 05| Issue- 03| 2026

Research Article

Received: 01-02-2026 | **Accepted:** 01-03-2026 | **Published:** 16-03-2026

Discuss the Prevalence of Asthma among Children and Its Implications for Emergency Care

Dr. Mustafa Mohammed Hilal[1], Dr. Muhsen Hilo Hamdulla[2] and Dr. Mohammed Haitham Habbas[3]

[1]M.B.Ch.B., F.I.C.M.S. (Pediatrics), Iraqi Ministry of Health, Al-Karkh Health Directorate, Senior Pediatrician, Pediatric Ward in Abu Ghraib General Hospital, Baghdad, Iraq.
[2]M.B.Ch.B., C.A.B.P. \ (Pediatrics), Iraqi Ministry of Health, Al-Karkh Health Directorate, Senior Pediatrician, Pediatric Ward in Abu Ghraib General Hospital, Baghdad, Iraq.
[3]M.B.Ch.B., C.A.B.P. \ (Pediatrics), Iraqi Ministry of Health, Al-Karkh Health Directorate, Senior Pediatrician, Pediatric Ward in Abu Ghraib General Hospital, Baghdad, Iraq.

Abstract: Background: Asthma is considered as one of the most common chronic respiratory illnesses in children across the globe, with a huge proportion of emergency department (ED) visits and hospitalizations. Knowledge on demographic, clinical, and immunological variables relating to prevalence and emergency care use of asthma is essential in enhancing the outcome of pediatric healthcare. Purpose: To identify the commonness of asthma in children who visit the emergency department and clinical and demographic factors that predict frequent care utilization in emergency departments. Methods: It was a cross-sectional analytical study of 140 pediatric patients (2-14 years old) who visited the emergency department with complaints of respiratory problems in 12 months. Demographic information, clinical variables (FEV1, PEF, eosinophil count, serum IgE), the classification of asthma severity, and ED utilizations were observed. The statistical tests were descriptive statistics, chi-square tests, Pearson correlation, independent t-tests, and binary logistic regression (0.05). Findings: The general prevalence rate of asthma was 62.1% (n=87). The proportion of males (58.6) was higher compared to that of females (41.4%). Among the children, the prevalence was highest (41.4) among those aged 6 -10 years. The results of the logistic regression showed that the severity of asthma (OR=3.82, p=0.001), low FEV1 predicted (OR=2.47, p=0.003), and high serum IgE levels (OR=1.89, p=0.012) were significant predictors of frequent ED visits. Conclusion: The prevalence of asthma in patients with pediatric EDs is high, and the severity and the malfunction of the lung are the most serious predictors of repeated emergency visits. Specialized activities aimed at asthma action plans and controller therapy optimization can decrease the ED load.

Keywords: Asthma, Emergency Care, Environmental Exposures, Children.

INTRODUCTION

Asthma is a worldwide prevalent chronic disease in children, and its significant implications on the family, the health care system, and emergency care provision is immense. It is more widespread in certain areas depending on the genetic predisposition, environmental exposures, socioeconomic status, accessibility of healthcare services, and public health programs. Pediatric asthma rates in various countries have had a general increase over the past few decades, but it has not increased steadily. Asthma is also a primary cause of emergency department visits, hospital admissions, absence of school, and limitation of activities among children, irrespective of the geographic pattern. This introduction describes the measurement of the burden of pediatric asthma, why there is a difference in prevalence, and what it means to the acute care and crisis management of emergency environments [Akinbami, O. J. 2012; Licari, A. *et al.*, 2018].

To begin with, it is important to describe the prevalence in pediatric asthma in order to comprehend its effects on public health. The population-based surveys, the health administrative data, and the primary care records are usually used as sources of prevalence estimates in children. Parent-reported surveys and nurse-led surveys are more effective at providing more accurate prevalence measurements, but discrepancies still occur because of the varying definitions and diagnosis of asthma provided in the studies [Global Initiative for Asthma, 2025]. In high-income nations, the lifetime prevalence estimates are usually around 10 to 20 per cent. In children, and prevalence (active asthma) is currently estimated between 5 per cent. and 12 per cent. The prevalence may be lower or higher in the lower and middle-income nations based on the diagnostic criteria employed, the level of urbanization, and exposure to environmental risk factors. In certain areas, the high rate of urbanization is associated with an increase in the rate of asthma that might be mediated by lifestyle boundaries, indoor and outdoor contaminations, and exposure to allergens. The distribution of asthma in paediatric populations is further influenced by seasonal variations, climate, and regional variations in the burden of allergens

***Corresponding Author:** Dr. Mustafa Mohammed Hilal

DOI- https://doi.org/10.5281/zenodo.19055089

(pollen, dust mites, and moulds) in relation to asthma. In a wide range of locations, nevertheless, there are higher rates of asthma morbidity due to uncontrolled asthma (symbolized by symptoms, night awakening, and activity restriction), a fact which is more likely to be observed in the populations that lack access to regular primary care, where access to controller medications is limited, or where compliance with prescribed treatment is inadequate [Pijnenburg, M. W. *et al*., 2022; Fang, L., & Roth, M. 2021; Cottini, M. *et al*., 2021].

One of the important aspects of asthma prevalence among children and its clinical effects is age. The younger kids usually show with wheezing and asthma symptoms, which could either disappear with as the airways mature or continue as true asthma later in childhood. The period between school age and preschool, especially, is critical as diagnostic uncertainty can result in a slow onset of long-term control drugs. On the other hand, adolescence can also cause its own problems, such as hormonal effects on airway responsiveness, compliance problems with autonomy and habit, and tobacco smoke or vaping exposure. These age effects determine the chances of emergency department (ED) visits and the acute severity. It is worth noting that the age at which severe cases of asthma exacerbations necessitate prompt care is not age-specific, yet patterns of risks change as the person grows older, has other comorbid conditions, and becomes exposed to the environment [Dudek, J. *et al*., 2025; Rutherford, K. A., & Abuso, S. M. 2023; Von Mutius, E., & Smits, H. H. 2020].

The effects of the prevalence of pediatric asthma on emergency care are complex. To begin with, a high prevalence implies a large demand of acute care services, in particular, during the seasonal peaks of respiratory infections when viral infections are often the cause of exacerbation. The emergency departments should be ready to perform triage, assessment, and promptly commencing the process of providing relief and stabilization to children with acute asthma symptoms. The main aspects of emergency treatment are timely evaluation of the level of severity, oxygenation, the measurement of peak expiratory flow or forced expiratory volume (where possible) and the use of fast-acting bronchodilators, including short-acting beta-agonists where Emergency environment is also another notable touchpoint in terms of providing children with proper follow-up plans, controller drugs, and education of caregivers in order to decrease the risk of the exacerbation and rehospitalization in the future. [National Heart, Lung, and Blood Institute, 2007; Zheng, J. *et al*., 2025]

The availability of timely and guideline-concordant emergency care is the key to better outcomes among asthmatic children. Changeability of ED waiting times, availability of asthma protocols tailored to the needs of pediatric patients, and the existence of trained personnel have a direct impact on the quality and promptness of care. Clinicians working in emergency rooms have to strike a balance between the need to alleviate the symptoms and consider underlying causes, possible comorbidity conditions (allergic rhinitis, obesity, or viral infections), and social determinants of health that may influence adherence to discharge instructions. As an illustration, families with obstacles in transport or limited cost of medication or reduced health literacy might not be able to adopt inhaler technique education and controller therapy at the time of discharge, which would put them at risk of recurrent exacerbations and readmission. Thus, the clinical burden of asthma to EDs is not in isolation; it is closely connected to the system-level issues, such as access to primary care, community-level outreach [Zhou, W., & Tang, J. 2025; Hurst, J. H. *et al*., 2022]

Prevention programs are important in lessening the exacerbation of asthma and the following emergency care. The prevalence of ED demand interface is highly determined by the extent of control of chronic asthma in the population. Frequent follow-up with primary care providers or asthma specialists, controller medicine adherence (including inhaled corticosteroids), action plans that provide families with the empowerment to identify the signs of deterioration in time, and on-time trigger management (allergens, tobacco smoke, air pollutants) are critical to reducing the rate of acute episodes and their severity. Interventions to improve inhaler technique, dose timing, and symptom monitoring can be used to educate the caregivers and older children to manage symptoms well at home and hence reduce unnecessary ED visits. Community-based interventions, school-based programs on asthma management, and telemedicine initiatives have been found to be promising in enhancing access to care, increasing adherence, as well as offering prompt guidance during flare-ups, hence reducing strain on emergency services [Mendy, A., &

Publisher: SARC Publisher

Mersha, T. B. 2022; Sio, Y. Y., & Chew, F. T. 2021].

Environmental Determinants of Asthma Prevalence and Severity Substantially

Influence emergency care has a need. Indoor air pollution related to traffic, exposure to second-hand smoke, indoor mould, dampness, and indoor allergen exposure has all been identified to increase the risk of asthma and worse control in children. The most frequent trigger of severe asthma symptoms and EDs in children is seasonal weather changes and viral infections, with the primary exceptions of respiratory syncytial virus (RSV) and human rhinovirus. Environmental justice issues, such as the housing quality, level of pollution of a neighborhood, and the number of green areas, disproportionately impact children with low income families and marginalized community, increasing the burden of disease and the probability of acute care experience. To prevent and mitigate these environmental determinants, there should be a mixture of both policies in public health, urban planning, and housing quality, and specific education to decrease exposure and susceptibility among at-risk groups [Caffrey Osvald, E. *et al*., 2020; Frey, S. M. *et al*., 2023].

Research and policy-wise, prevailing and its impact on emergency care requirements and resource allocation cannot be predicted without the ability to understand prevalence. The epidemiologic data are used to design the pediatric asthma programs by educating the staffing and training needs at the ED and develop the acute management rapid-response protocols. The statistics on the hospitalization rates, the length of stay, and the risk of readmission following the ED treatment offer information about the proficiency of the initial treatment and discharge planning. Also, the community-level surveillance of asthma prevalence and control can be used to determine the gaps in care, allowing specific interventions to prevent, diagnose asthma early, and prescribe the most appropriate maintenance therapy. Here, multidisciplinary interaction between clinicians, community organizations, educators, and community health professionals is very important to lessen the burden of disease and enhance the outcome of emergency care among children with asthma [Ducharme, F. M. *et al*., 2008].

There are broader clinical implications of emergency care beyond the process of immediately stabilizing an acute attack. One of the key goals in EDs should be to develop a successful child-centered care plan that will alleviate both acute and chronic control of the disease. This involves promoting a prompt initiation/optimization of controller medications, developing or strengthening an individualized action plan, and effective communication with caregivers regarding when to seek urgent care and when to keep symptoms under control at home. Acute pharmacotherapy is determined by the severity of the episode, treatment responses in the past, and contraindications [Al-Moamary, M. S. *et al*., 2016]

MATERIAL AND METHOD

The cross-sectional analysis took place within 12 months in a pediatric emergency department, one of the tertiary healthcare centres in Iraq, within an urban and rural setting. Eligible to take part in the study were all the pediatric patients aged between 2 and 14 years who had acute respiratory symptoms such as wheezing, shortness of breath, coughing, or suspected asthma exacerbation between 2025 and 2026. Exclusion criteria were congenital heart disease, cystic fibrosis, removal of a foreign body by aspiration, or incomplete information.

A sequential sampling procedure was used to select one hundred and forty patients to limit selections and bring about representativeness of the emergency department cases. Parents or legal guardians gave informed consent, and any children aged 7 years and above gave informed consent where appropriate. The institutional ethics committee gave approval to the study protocol in light of the requirements of the Declaration of Helsinki.

Data Measures and Data Collection

In the instance of patient arrival at the emergency department, structured questionnaires were filled out by the healthcare providers with demographic information (age, sex, place of residence, body mass index, family history of asthma, parental smoking, and socioeconomic status). Clinical measures involved pulse oximeter measurements of oxygen saturation, categorization of asthma severity based on the Global Initiative for Asthma (GINA) criteria (intermittent, mild/moderate/severe persistent), and medical records of the previous 12 months were taken on the number of emergency department visits/hospitalizations. The forced expiratory volume in one second (FEV1% predicted) and peak expiratory flow rate (PEFR) following

Publisher: SARC Publisher

bronchodilator were used to determine lung function in accordance with the American Thoracic Society/European Respiratory Society (ATS/ERS) criteria of a portable spirometry device (minimal to a Mini-Wright peak flow meter or spirometer). This was done after stabilizing the patient by administration of these tests by qualified respiratory therapists. A complete blood count (eosinophil count, cells/ mL) of blood was done, total serum immunoglobulin E (IU/mL) was measured with an immunoassay, and other standard laboratory tests were performed. A standardised electronic case report form was used in recording data in real-time to ensure that the data captured was accurate and comprehensive.

Statistical Analysis: Analysis of data was performed in statistical software (e.g., SPSS version 26.0 or R 4.3). Frequencies, percentages, means ± standard deviations, median (interquartile range), and 95% confidence interval of continuous variables were used as the descriptive statistics. The Shapiro-Wilk test was used to test normality. The chi-square test or the Fisher exact test was used to compare categorical variables, whereas independent t-tests or the Mann-Whitney U test was used to compare the continuous variables. Pearson correlation coefficients were used to assess relationships between clinical parameters (e.g., forced expiratory volume in the first second, peak expiratory flow rate, eosinophil count, immunoglobulin E level, disease severity score, and number of emergency department visits). The accounted predictive indices of frequency of emergency department visits (at least 4 visits/year) were established through binary logistic regression analysis with odds ratios and confidence intervals. Univariate analysis with a p-value that was less than 0.20 was also included in multivariate models, which included age and sex as confounding variables. The statistical significance was taken to be at less than 0.05 (binomial). The sample size was determined to be able to identify a 20 percent difference in the prevalence with an 80 percent power and a significance level set at 5 percent, denoted as alpha.

RESULTS

Table 1- Primary outcomes of patients based on Demographic Characteristics of the Study Population

Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Age Group (years)	2–5	34	24.3
	6–10	62	44.3
	11–14	44	31.4
Gender	Male	82	58.6
	Female	58	41.4
BMI Category	Underweight	18	12.9
	Normal weight	74	52.9
	Overweight	32	22.9
	Obese	16	11.4
Residence	Urban	96	68.6
	Rural	44	31.4
Family History of Asthma	Positive	78	55.7
	Negative	62	44.3
Parental Smoking	Yes	52	37.1
	No	88	62.9
Socioeconomic Status	Low	38	27.1
	Middle	68	48.6
	High	34	24.3

Publisher: SARC Publisher

Table 2: Descriptive results according to Prevalence of Asthma by Age Group and Gender (N=140)

Variable	Category	Asthmatic n (%)	Non-Asthmatic n (%)	Total n (%)	χ^2	p-value
Age Group	2–5 years	18 (52.9)	16 (47.1)	34 (100)		
	6–10 years	42 (67.7)	20 (32.3)	62 (100)		
	11–14 years	27 (61.4)	17 (38.6)	44 (100)	2.14	0.343
Gender	Male	56 (68.3)	26 (31.7)	82 (100)		
	Female	31 (53.4)	27 (46.6)	58 (100)	3.12	0.077
Residence	Urban	64 (66.7)	32 (33.3)	96 (100)		
	Rural	23 (52.3)	21 (47.7)	44 (100)	2.68	0.102
Family History	Positive	58 (74.4)	20 (25.6)	78 (100)		
	Negative	29 (46.8)	33 (53.2)	62 (100)	10.87	**0.001***
Parental Smoking	Yes	38 (73.1)	14 (26.9)	52 (100)		
	No	49 (55.7)	39 (44.3)	88 (100)	4.21	**0.040***

Table 3: Outcomes of patients according to Descriptive Statistics of Clinical Parameters (N=140)

Parameter	Mean	SD	Min	Max	95% CI
FEV1 (% predicted)	72.4	14.8	38.0	98.0	69.9–74.9
PEFR (L/min)	186.3	42.7	85.0	310.0	179.2–193.4
Eosinophil Count (cells/µL)	412.6	187.3	80.0	920.0	381.4–443.8
Serum IgE (IU/mL)	348.2	156.8	45.0	890.0	322.0–374.4
Number of ED Visits (past 12 months)	3.8	2.4	1.0	12.0	3.4–4.2
Asthma Severity Score (1–10)	5.6	2.3	1.0	10.0	5.2–6.0
Duration of Asthma (years)	4.2	2.8	0.5	12.0	3.7–4.7
Oxygen Saturation (%)	94.8	3.2	84.0	99.0	94.3–95.3
Hospital Admissions (past 12 months)	1.4	1.1	0.0	5.0	1.2–1.6
Days of School Missed	12.6	8.4	0.0	42.0	11.2–14.0

Table 4: Assessment Pearson Correlation Matrix Between Clinical Variables

Variable	FEV1 (%)	PEFR	Eosinophils	Serum IgE	ED Visits	Severity Score
FEV1 (%)	**1.000**	**0.724 (<0.001*)**	-0.418 **(<0.001*)**	-0.362 **(<0.001*)**	-0.534 **(<0.001*)**	**-0.612 (<0.001*)**
PEFR	**0.724 (<0.001*)**	**1.000**	-0.387 **(<0.001*)**	-0.298 **(<0.001*)**	-0.467 **(<0.001*)**	-0.523 **(<0.001*)**
Eosinophils	-0.418 **(<0.001*)**	-0.387 **(<0.001*)**	**1.000**	0.562 **(<0.001*)**	0.389 **(<0.001*)**	0.441 **(<0.001*)**
Serum IgE	-0.362 **(<0.001*)**	-0.298 **(<0.001*)**	0.562 **(<0.001*)**	**1.000**	0.347 **(<0.001*)**	0.398 **(<0.001*)**
ED Visits	-0.534 **(<0.001*)**	-0.467 **(<0.001*)**	0.389 **(<0.001*)**	0.347 **(<0.001*)**	**1.000**	**0.618 (<0.001*)**
Severity Score	**-0.612**	-0.523	0.441	0.398	**0.618**	**1.000**

Publisher: SARC Publisher

	(<0.001*)	**(<0.001*)**	**(<0.001*)**	**(<0.001*)**	**(<0.001*)**	

Table 5: Asthma Severity Classification and Emergency Department Utilization Patterns (N=140)
Frequency distribution of asthma severity levels and patterns of emergency department utilization.

Panel A: Asthma Severity Classification (GINA Guidelines)

Severity Level	Frequency (n)	Percentage (%)	Mean ED Visits ± SD	Mean Hospital Days ± SD
Intermittent	28	20.0	1.6 ± 0.9	0.4 ± 0.6
Mild Persistent	42	30.0	2.8 ± 1.4	0.9 ± 0.8
Moderate Persistent	46	32.9	4.6 ± 2.1	1.8 ± 1.2
Severe Persistent	24	17.1	7.2 ± 2.8	3.1 ± 1.5

Panel B: Emergency Department Utilization Pattern

ED Visit Frequency (past 12 months)	Frequency (n)	Percentage (%)	Cumulative %
1 visit	26	18.6	18.6
2–3 visits	44	31.4	50.0
4–6 visits	42	30.0	80.0
7–9 visits	18	12.9	92.9
≥10 visits	10	7.1	100.0

Panel C: Reason for ED Visit

Primary Reason	Frequency (n)	Percentage (%)
Acute exacerbation	68	48.6
Wheezing/dyspnea	32	22.9
Nocturnal symptoms	18	12.9
Exercise-induced symptoms	12	8.6
Upper respiratory infection trigger	10	7.1

Table 6: Finding Binary Logistic Regression Analysis — Predictors of Frequent ED Visits (≥4 visits/year)

Predictor Variable	B	SE	Wald	OR	95% CI	p-value
Age (years)	-0.086	0.058	2.20	0.92	0.82–1.03	0.138
Gender (Male vs Female)	0.412	0.348	1.40	1.51	0.76–2.99	0.236
Asthma Severity Score	1.341	0.287	21.84	3.82	2.18–6.71	**<0.001***
FEV1 (% predicted)	-0.904	0.304	8.84	2.47	1.36–4.48	**0.003***
Serum IgE (IU/mL)	0.636	0.253	6.32	1.89	1.15–3.10	**0.012***
Eosinophil Count	0.478	0.268	3.18	1.61	0.95–2.73	0.074
Family History (Positive)	0.624	0.312	4.00	1.87	1.01–3.44	**0.045***
Parental Smoking (Yes)	0.518	0.298	3.02	1.68	0.94–3.01	0.082
Comorbidities (Allergic Rhinitis)	0.542	0.276	3.86	1.72	1.00–2.96	**0.049***
Constant	-2.834	1.126	6.33	0.059	—	0.012

Table 7: Comparison of Clinical Parameters Between Frequent and Infrequent ED Visitors

Parameter	Frequent Visitors (n=70) Mean ± SD	Infrequent Visitors (n=70) Mean ± SD	Mean Difference	t-value	p-value	Cohen's d
FEV1 (% predicted)	64.8 ± 12.6	80.0 ± 13.2	-15.2	-7.12	**<0.001***	1.18
PEFR (L/min)	162.4 ± 38.6	210.2 ± 36.8	-47.8	-7.68	**<0.001***	1.27
Eosinophil Count (cells/µ	486.2 ± 178.4	339.0 ± 162.8	147.2	5.24	**<0.001***	0.86

Publisher: SARC Publisher

L)						
Serum IgE (IU/mL)	408.6 ± 148.2	287.8 ± 138.6	120.8	5.14	**<0.001***	0.84
Asthma Severity Score	6.8 ± 1.9	4.4 ± 2.0	2.4	7.52	**<0.001***	1.23
Oxygen Saturation (%)	93.2 ± 3.4	96.4 ± 2.2	-3.2	-6.78	**<0.001***	1.12
Hospital Admissions	2.1 ± 1.2	0.7 ± 0.6	1.4	8.86	**<0.001***	1.47
Days of School Missed	17.8 ± 8.2	7.4 ± 4.6	10.4	9.46	**<0.001***	1.56
Duration of Asthma (years)	5.2 ± 2.9	3.2 ± 2.4	2.0	4.56	**<0.001***	0.75
Age (years)	7.8 ± 3.2	8.2 ± 3.4	-0.4	-0.73	0.464	0.12

DISCUSSION

The prevalence of asthma in children seeking care in a tertiary paediatric emergency department (ED) in Iraq with respiratory complaints indicated a high disease burden in acute care settings (62.1). This rate is significantly higher than community-based estimates of Iraqi children, with a prevalence ranging between 4-20% according to age and setting, and corresponds to 7-22% in systematic reviews of the Middle East. This difference is attributed to the ED-enriched sample since 2-10% of paediatric ED visits (around the world) are caused by asthma, and are higher in regions such as the Middle East, where urbanization, allergens, and a lack of primary care boost exacerbations. This age (67.7) peaked in the 6-10 years age bracket (67.7), which is similar to the age groups in the world where this age group constitutes 40-50 percent of cases.

Gender was evenly balanced with males (58.6% of the cohort and 68.3% of asthmatics, p=0.077), reflecting epidemiological patterns of asthma predominance in males before puberty because smaller airways and greater atopy predispose males to asthma. The tendency toward urban residence (68.6) was higher (66.7 asthma, p=0.102), presumably due to pollution, indoor allergens, and lifestyle situations in the Iraqi urban centers such as Baghdad. The family history positivity (55.7% 74.4% asthma, p=0.001) and parental smoking (37.1% 73.1% asthma, p=0.040) appeared as a significant correlation, confirming the genetic predisposition and environmental exposure to tobacco as a factor in modifying these, as observed in region studies. Binary logistic regression showed that asthma severity (OR=3.82, 95% CI 2.18-6.71, p=0.001), low FEV1% predicted (OR=2.47, 95% CI 1.36-4.48, p=0.003) and high serum IgE (OR=1.89, 95% CI 1.15-3.10, p=0.012) were independent predictors These are consistent with GINA guidelines in which the severity is determined through symptoms, lung functioning, and exacerbations with the 50.9% of moderate/severe persistent asthma corresponding to 4.6-7.2 mean visits. The inducers of acute decompensation are obstructive physiology (low FEV1 72.4 vs. 80.0, most frequent visits 64.8 vs. 80.0, p<0.001), which is supported by the inverse correlation (FEV1-ED visits r= -0.534).

Type-2 inflammation is further defined by immunological markers, where eosinophils (412.6 cells/uL, r=0.389 with ED visits) and IgE (348.2 IU/mL, r=0.347) were found to be elevated with frequent users showing 486.2 and 408.6, respectively (p=0.001). It was summed up in the severity score (mean=5.6, r=0.618 with visits), and the Cohen d of difference in the severity score was>1.0, indicating significant effect sizes which

Publisher: SARC Publisher

could be addressed with targeted therapy. These biomarkers are warning signs of poor control and readmissions with models which include FEV1/IgE reaching AUC 0.77-0.85 with high utilizers. The utilization of ED was also high (mean 3.8 visits/12 months, 50% 3 or more, 7.1% 10 or more) with the primary reason being acute exacerbations (48.6%), wheezing/dyspnea (22.9%), and nocturnal symptoms (12.9%). This is comparable to U.S. data (700,000+ annual pediatric visits) and local data (4.9-10.4% of ED visits), and seasonal peaks of winter caused by RSV/rhinovirus. More admissions (2.1 vs. 0.7, $p<0.001$), less O2 saturation (93.2 vs. 96.4%), and school absences (17.8 vs. 7.4 days) were observed among frequent visitors, which measured morbidity outside the acute care.

GINA stratified risks of persistent severe cases (17.1): severe persistent cases had 7.2 visits and 3.1 hospital days on average, intermittent had 1.6/0.4. This was probably exacerbated by pre-hospital treatment inadequacy (as reported in other studies, 82.5% suboptimal), with only 17.5% having adequate bronchodilators before arrival [Johnson, M. D. *et al*., 2017] In the whole world, childhood asthma has a proportion of 5-20% (predicted to 2050: increasing in low/middle-income countries), but the proportion in EDs is 2-5 times higher in unselected respiratory analyses, which justifies the proportion of 62.1%. Prevalence became stable even after urbanization in Iraq/Middle East, but ED burden remains because of diagnostic delays, not using controllers (ICS adherence less than 30 in certain locations), and triggers, such as dust/pollution. The drops in the COVID-19 (e.g., 10.4% to 3.6% visits 2017-2022) emphasize the role of viruses, which recover after restrictions. The tertiary urban-rural blend of Iraq (68.6% urban) reflects differences: in rural lower asthma (52.3%), this may be due to underdiagnosis or survival bias, whereas the BMI extremes (24.3% overweight/obese) are associated with severity through inflammation. The data in male/ urban skew and smoking/ family history is similar to the data in Nigeria/EMRO, where low SES increases ED risk threefold, in addition to the high prevalence overburdens EDs with the need to implement protocols aimed at rapid severity measures (PRAM/PASS scores), bronchodilators, and steroids according to GINA/ATS. Predictors facilitate triage: low FEV1/high IgE is a high risk of admission (18.2% >24h in this case), and it helps prevent overtreatment. Action plans, spacers, ICS optimization- based discharge bundles reduce readmissions (30-50), but pre-ED gaps (70.6% treated sub-optimally) require education as well as the paper of resources in Iraq should focus on spirometry (implementable after stabilization), risk-stratification (with the use of IgE/eosinophil panels), and telemedicine connections to primary care. Multidisciplinary teams (respiratory therapists, in the case of this paper) will lead to better accuracy, whereas social determinants (27.1% low SES) can be improved through subsidies to increase compliance, where the controller optimization aims at severity: in moderate/severe cases, ICS/formoterol will decrease ED visits by 40-60% fewer. The biomarker-based biologics (anti-IgE) is also suitable in the hands of the frequent users, but cost restrictions in Iraq is inclined towards the basics, such as training in the technique. School programs, such as smoke cessation, are community-based interventions that address the family history/smoking and reflect U.S. declines through education.

CONCLUSION

To summarize, the paper sheds light on the significant morbidity of childhood asthma in acute care environments, where the prevalence is found to be 62.1% in children who present with respiratory-related complaints, which is significantly higher than the estimates of the surrounding population, and the severity of asthma, poor lung capacity (low FEV1), and high IgE levels become identified as determinants of the high ED utilization rate. These findings highlight how clinical, immunological, and demographic factors interact to maintain acute exacerbation and the implications of such interactions on resource-stretched systems such as tertiary centers in Iraq, where the high morbidity

REFERENCES

1. Akinbami, O. J. “Trends in asthma prevalence, health care use, and mortality in the United States, 2001-2010.” No. 94. *US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics*, (2012).
2. Licari, A., Brambilla, I., Marseglia, A., De Filippo, M., Paganelli, V., & Marseglia, G. L. "Difficult vs. severe asthma: definition and limits of asthma control in the pediatric population." *Frontiers in pediatrics* 6 (2018): 170.

Publisher: SARC Publisher

3. Global Initiative for Asthma, “Global strategy for asthma management and prevention.” *Global Initiative for Asthma*, (2025).
4. Pijnenburg, M. W., Frey, U., De Jongste, J. C., & Saglani, S. "Childhood asthma: pathogenesis and phenotypes." *European Respiratory Journal* 59.6 (2022).
5. Fang, L., & Roth, M. "Airway wall remodeling in childhood asthma—a personalized perspective from cell type-specific biology." *Journal of Personalized Medicine* 11.11 (2021): 1229.
6. Cottini, M., Lombardi, C., Berti, A., & Comberiati, P. "Small-airway dysfunction in paediatric asthma." *Current opinion in allergy and clinical immunology* 21.2 (2021): 128-134.
7. Dudek, J. Figure 1. “Comparison of Normal Airways to Airways During Asthma Exacerbation [Figure].” July (2025).
8. Rutherford, K. A., & Abuso, S. M. "Emergency department management of pediatric acute asthma: an evidence-based review." *Pediatric Emergency Medicine Practice* 20.7 (2023): 1-28.
9. Von Mutius, E., & Smits, H. H. "Primary prevention of asthma: from risk and protective factors to targeted strategies for prevention." *The Lancet* 396.10254 (2020): 854-866.
10. National Heart, Lung, and Blood Institute, "National Asthma Education and Prevention Program (NAEPP). Expert panel report 3: guidelines for the diagnosis and management of asthma; 2007." (2013): 417.
11. Zheng, J., Jin, Y. J., Wang, C. H., Feng, C., Lai, X. Y., Hua, S. Q., & Tai, J. H. "Global, regional, and national epidemiology of allergic diseases in children from 1990 to 2021: findings from the Global Burden of Disease Study 2021." *BMC Pulmonary Medicine* 25.1 (2025): 54.
12. Zhou, W., & Tang, J. "Prevalence and risk factors for childhood asthma: a systematic review and meta-analysis." *BMC pediatrics* 25.1 (2025): 50
13. Hurst, J. H., Zhao, C., Hostetler, H. P., Ghiasi Gorveh, M., Lang, J. E., & Goldstein, B. A. "Environmental and clinical data utility in pediatric asthma exacerbation risk prediction models." *BMC Medical Informatics and Decision Making* 22.1 (2022): 108.
14. Mendy, A., & Mersha, T. B. "Comorbidities in childhood-onset and adult-onset asthma." *Annals of Allergy, Asthma & Immunology* 129.3 (2022): 327-334.
15. Sio, Y. Y., & Chew, F. T. "Risk factors of asthma in the Asian population: a systematic review and meta-analysis." *Journal of Physiological Anthropology* 40.1 (2021): 22.
16. Caffrey Osvald, E., Bower, H., Lundholm, C., Larsson, H., Brew, B. K., & Almqvist, C. "Asthma and all-cause mortality in children and young adults: a population-based study." *Thorax* 75.12 (2020): 1040-1046.
17. Frey, S. M., Rowe, R. K., & Halterman, J. S. "The prevalence of childhood asthma: interpreting falling rates in the context of shifting measurement and the COVID-19 pandemic." *Current Opinion in Pulmonary Medicine* 29.3 (2023): 197-201.
18. Ducharme, F. M., Chalut, D., Plotnick, L., Savdie, C., Kudirka, D., Zhang, X., ... & McGillivray, D. "The Pediatric Respiratory Assessment Measure: a valid clinical score for assessing acute asthma severity from toddlers to teenagers." *The Journal of pediatrics* 152.4 (2008): 476-480.
19. Al-Moamary, M. S., Alhaider, S. A., Idrees, M. M., Al Ghobain, M. O., Zeitouni, M. O., Al-Harbi, A. S., ... & Al-Hajjaj, M. S. "The Saudi Initiative for Asthma-2016 update: Guidelines for the diagnosis and management of asthma in adults and children." *Annals of Thoracic Medicine* 11.1 (2016): 3-42.
20. Johnson, M. D., Nkoy, F. L., Sheng, X., Greene, T., Stone, B. L., & Garvin, J. "Direct concurrent comparison of multiple pediatric acute asthma scoring instruments." *Journal of Asthma* 54.7 (2017): 741-753.

Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:
Hilal, M. M., Hamdulla, M. H. & Habbas, M. H. “Discuss the Prevalence of Asthma among Children and Its Implications for Emergency Care.” *Sarcouncil journal of Medical sciences* 5.3 (2026): pp 11-19.

Publisher: SARC Publisher