International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Original Article

A Study on Clinical Profile, Attitude and Practice Among Parents Towards Inhalation Therapy in Childhood Asthma (3–12 Years) At M.G.M. Medical College & L.S.K. Hospital.

Dr. Shreemant Gautam[1], Dr. Kunal Anand[2]

[1]Assistant Professor, Department of Pediatrics, M.G.M. Medical College & L.S.K. Hospital, Kishanganj, Bihar, INDIA
[2] Associate professor, Department of Pediatrics, Lord Buddha Kosi Medical College, Bihar, INDIA

Corresponding Author:

Dr. Shreemant Gautam
Assistant Professor, Department of Pediatrics, M.G.M. Medical College & L.S.K. Hospital, Kishanganj, Bihar, INDIA.
Shreemant009@gmail.com

Received: 15-01-2026
Accepted: 04-02-2026
Available online: 27-02-2026

ABSTRACT

Background: Childhood asthma is one of the most common chronic respiratory disorders worldwide, with inhalation therapy being the cornerstone of management. Despite its proven efficacy, parental attitudes and practices towards inhaler use remain suboptimal due to lack of knowledge, fear of side effects, and social stigma.
Objectives: To study the clinical profile of asthmatic children aged 3–12 years, and to assess parental attitude and practice towards inhalation therapy.
Methods: A cross-sectional observational study was conducted over 12 months in the Department of Paediatrics, M.G.M. Medical College & L.S.K. Hospital. Fifty children aged 3–12 years diagnosed with bronchial asthma and their parents/guardians were enrolled. A pre-tested structured questionnaire was used to collect data on demographic profile, asthma severity, and parental knowledge, attitude, and practice (KAP) towards inhalation therapy.
Results: Among 50 enrolled children, 62% were male. The mean age was 7.2 ± 2.6 years. Mild persistent asthma was the most common severity (42%). Only 48% of parents had adequate knowledge about inhaler technique. Negative attitude towards inhalers was observed in 44% of parents, primarily due to fear of steroid side effects (64%) and social stigma (38%). Correct inhaler technique was demonstrated by only 36% of caregivers. Spacer device usage was reported in 52% of cases.
Conclusion: Parental knowledge and correct practice of inhalation therapy in childhood asthma is significantly inadequate. Targeted educational interventions addressing misconceptions about inhaled corticosteroids and proper inhaler technique training are urgently needed to improve asthma outcomes in children.

Keywords*: Childhood asthma, inhalation therapy, parental attitude, inhaler technique, bronchial asthma, spacer device.*

INTRODUCTION

Bronchial asthma is a chronic inflammatory disorder of the airways characterized by recurrent episodes of wheezing, breathlessness, chest tightness, and cough, particularly at night or in the early morning. These episodes are usually associated with widespread, variable airflow obstruction that is often reversible, either spontaneously or with treatment.[1]

Asthma is one of the most common chronic diseases of childhood, affecting approximately 14% of children globally. In India, the prevalence of asthma in children ranges from 4–20%, with significant variation across geographical regions.[2] The Global Initiative for Asthma (GINA) guidelines recommend inhalation therapy as the preferred route of drug delivery in asthmatic children, as it delivers medication directly to the airways, minimizes systemic side effects, and provides rapid bronchodilation.[3]

Despite the well-established benefits of inhaled therapy, studies consistently demonstrate poor adherence, suboptimal inhaler technique, and negative parental attitudes towards inhalers in the pediatric population. Parents often harbor unfounded fears regarding inhaled corticosteroids (ICS), including concerns about growth retardation, adrenal suppression, and addiction. Social stigma associated with the use of inhalers and nebulizers in public further compounds non-adherence.[4,5]

Several studies from India and other developing countries have highlighted that parents prefer oral medications over inhaled therapy due to misconceptions and lack of proper counseling.[6] The choice of inhaler device in children is age-dependent, and incorrect device selection or technique leads to reduced drug deposition in the lower airways, thereby diminishing therapeutic efficacy.[7]

Studies have shown that structured educational programs, repeated inhaler technique training, and addressing parental concerns about inhaled corticosteroids significantly improve adherence and asthma control in children.[8] Given this context, understanding the baseline knowledge, attitude, and practice (KAP) of parents towards inhalation therapy is essential for designing effective intervention strategies.

This study was conducted at M.G.M. Medical College & L.S.K. Hospital to evaluate the clinical profile of asthmatic children aged 3–12 years and to systematically assess parental attitude and practice towards inhalation therapy in this cohort.

OBJECTIVES

Primary Objective

To study the clinical profile of children aged 3–12 years diagnosed with bronchial asthma attending the Paediatrics OPD/IPD at M.G.M. Medical College & L.S.K. Hospital.

Secondary Objectives

1. To assess parental knowledge regarding inhalation therapy and inhaler devices.
2. To evaluate parental attitude towards the use of inhalation therapy in their asthmatic children.
3. To determine the correctness of inhaler technique practiced by parents/caregivers.
4. To identify barriers to the acceptance and correct use of inhalation therapy.

METHODS

Study Design

A hospital-based cross-sectional observational study.

Study Setting

Department of Paediatrics, M.G.M. Medical College & L.S.K. Hospital, conducted over a period of 12 months.(July 2024 to June 2025)

Study Population

Fifty children aged 3–12 years diagnosed with bronchial asthma as per GINA 2022 criteria, along with their parents/guardians attending the Paediatrics OPD and IPD.

Inclusion Criteria

Children aged 3–12 years with a confirmed diagnosis of bronchial asthma by a pediatrician; children with at least one prior episode requiring bronchodilator therapy; parents/guardians willing to provide informed consent.

Exclusion Criteria

Children with concomitant chronic respiratory conditions (e.g., cystic fibrosis, congenital heart disease); severely ill children requiring immediate intensive care; parents/guardians unable to communicate; children outside the 3–12 year age group.

Data Collection

A pre-tested, semi-structured questionnaire was administered to parents/guardians in the local language. The questionnaire was divided into four sections: (a) sociodemographic profile of the child and parent, (b) clinical profile and asthma severity classification per GINA guidelines, (c) parental knowledge about inhalation therapy (10-item scale, scored 0–10), and (d) parental attitude (5-point Likert scale, 8 items) and practice assessment including live demonstration of inhaler technique.

Scoring

Knowledge score: 0–4 = poor, 5–7 = moderate, 8–10 = good. Attitude: positive (score ≥ 24/40) vs. negative (< 24/40). Practice: assessed by trained pediatrician using a validated 10-step inhaler technique checklist; ≥ 7 correct steps = adequate.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 23.0. Descriptive statistics including frequency, percentage, mean, and standard deviation were used. Chi-square test was applied to assess association between categorical variables. A p-value < 0.05 was considered statistically significant.

Ethical Considerations

Ethical clearance was obtained from the Institutional Ethics Committee of M.G.M. Medical College. Written informed consent was obtained from all parents/guardians prior to enrollment. Confidentiality of data was maintained throughout the study

RESULT

A total of 50 children with bronchial asthma and their parents/guardians were enrolled in this study. The findings are presented below.

Sociodemographic Profile of Study Participants

Variable	Category	Number (n)	Percentage (%)
Gender of Child	Male	31	62.0
	Female	19	38.0
Age Group	3–5 years	15	30.0
	6–8 years	18	36.0
	9–12 years	17	34.0
Residence	Urban	28	56.0
	Rural	22	44.0
Parental Education	Illiterate	7	14.0
	Primary	11	22.0
	Secondary	18	36.0
	Graduate & above	14	28.0
Socioeconomic Status	Lower class	16	32.0
	Middle class	26	52.0
	Upper class	8	16.0

Table 1: Sociodemographic Profile of Study Participants (n=50)

Clinical Profile and Asthma Severity

Parameter	Category	n	%
Asthma Severity (GINA)	Intermittent	10	20.0
	Mild Persistent	21	42.0
	Moderate Persistent	14	28.0
	Severe Persistent	5	10.0
Family History of Asthma	Present	27	54.0
	Absent	23	46.0
Trigger Factors	Dust/Allergens	32	64.0
	Infections (URTI)	24	48.0
	Exercise	14	28.0
	Cold air/Weather	18	36.0
Duration of Illness	< 1 year	12	24.0
	1–3 years	21	42.0
	> 3 years	17	34.0
Previous Hospitalization	Yes	22	44.0
	No	28	56.0

Table 2: Clinical Profile and Asthma Severity (n=50)

Current Inhaler Device Usage

Device Type	Number (n)	Percentage (%)
Metered Dose Inhaler (MDI) with Spacer	18	36.0
MDI without Spacer	12	24.0

Dry Powder Inhaler (DPI)	8	16.0
Nebulizer	9	18.0
Oral medication only (no inhaler)	3	6.0

Table 3: Current Inhaler Device Usage (n=50)

Parental Knowledge Regarding Inhalation Therapy

Knowledge Domain	Correct Response n (%)	Incorrect/Unaware n (%)
Aware inhalation is preferred route	38 (76.0)	12 (24.0)
Knows purpose of reliever inhaler	32 (64.0)	18 (36.0)
Knows purpose of controller inhaler	24 (48.0)	26 (52.0)
Knows correct spacer use	22 (44.0)	28 (56.0)
Aware of steroid safety in correct dose	19 (38.0)	31 (62.0)
Knows signs of poor asthma control	27 (54.0)	23 (46.0)
Knows when to seek emergency care	33 (66.0)	17 (34.0)
Knows inhaler dose/frequency prescribed	29 (58.0)	21 (42.0)
Knows to rinse mouth after ICS	15 (30.0)	35 (70.0)
Knows how to clean spacer	17 (34.0)	33 (66.0)

Table 4: Parental Knowledge Regarding Inhalation Therapy (n=50)

Overall knowledge score: Good (8–10): 10 (20%), Moderate (5–7): 26 (52%), Poor (0–4): 14 (28%). Adequate knowledge (score ≥ 5): 36 (72%).

Parental Attitude Towards Inhalation Therapy

Attitude Item	Agree n (%)	Neutral n (%)	Disagree n (%)
Inhalers are effective for asthma	36 (72.0)	7 (14.0)	7 (14.0)
Afraid of inhaled steroid side effects	32 (64.0)	8 (16.0)	10 (20.0)
Inhalers cause addiction/dependency	22 (44.0)	10 (20.0)	18 (36.0)
Reluctant to use inhaler in public	19 (38.0)	11 (22.0)	20 (40.0)
Prefer oral medicines over inhalers	24 (48.0)	9 (18.0)	17 (34.0)
Satisfied with inhaler treatment outcome	27 (54.0)	13 (26.0)	10 (20.0)
Inhalers reduce emergency hospital visits	28 (56.0)	10 (20.0)	12 (24.0)
Would recommend inhaler to others	23 (46.0)	15 (30.0)	12 (24.0)

Table 5: Parental Attitude Towards Inhalation Therapy (n=50)

Overall attitude: Positive (score ≥ 24): 28 (56%); Negative (< 24): 22 (44%).

Assessment of Inhaler Technique (Practice)

Step in Inhaler Technique	Performed Correctly n (%)
Removed cap and shook inhaler	44 (88.0)
Attached spacer device correctly	22 / 26 with spacer (84.6)
Exhaled completely before actuation	21 (42.0)
Placed mouthpiece correctly in mouth	38 (76.0)
Actuated inhaler at start of slow breath	18 (36.0)
Performed slow, deep inhalation	20 (40.0)
Held breath for 5–10 seconds	17 (34.0)
Waited 30 seconds between puffs	23 (46.0)
Rinsed mouth after ICS use	14 (28.0)
Stored inhaler/device appropriately	32 (64.0)

Table 6: Step-wise Assessment of Inhaler Technique (n=50)

Adequate inhaler technique (≥ 7/10 steps correct): 18 (36%); Inadequate (< 7 steps): 32 (64%).

Barriers to Inhalation Therapy

Barrier	Number (n)	Percentage (%)
Fear of steroid side effects	32	64.0
Social stigma / embarrassment	19	38.0
Belief that inhalers cause dependency	22	44.0
Difficulty in inhaler technique	26	52.0
High cost of devices/medications	18	36.0
Non-availability at local pharmacy	11	22.0

Preference for traditional/herbal remedies	14	28.0
Child's refusal to use inhaler	16	32.0

Table 7: Barriers to Inhalation Therapy (n=50; multiple responses)

Association Between Parental Education and Knowledge/Attitude

Education Level	Good Knowledge n (%)	Positive Attitude n (%)	Adequate Technique n (%)
Illiterate (n=7)	0 (0.0)	1 (14.3)	1 (14.3)
Primary (n=11)	1 (9.1)	4 (36.4)	2 (18.2)
Secondary (n=18)	5 (27.8)	10 (55.6)	7 (38.9)
Graduate & above (n=14)	9 (64.3)	13 (92.9)	8 (57.1)
p-value	< 0.001*	< 0.001*	0.012*

Table 8: Association Between Parental Education and KAP (Chi-square test, p<0.05 significant)*

DISUSSION

This study assessed the clinical profile, parental knowledge, attitude, and practice regarding inhalation therapy in 50 children with bronchial asthma aged 3–12 years at M.G.M. Medical College & L.S.K. Hospital.

In our study, 62% of asthmatic children were male, which is consistent with the known sex predilection of childhood asthma. Several epidemiological studies have reported a male predominance in prepubertal asthma, attributed to anatomical differences in airway caliber and immunological factors.[9] This finding is comparable to studies by Babu et al. (2014) and Aggarwal et al. (2010), who reported male preponderance of 60–65% in similar age groups.[10]

Mild persistent asthma was the most common severity category (42%), followed by moderate persistent (28%). This distribution mirrors findings from tertiary care centers across India, where mild to moderate asthma constitutes the majority of pediatric outpatient cases.[11] The predominance of dust and allergen exposure (64%) as the primary trigger is consistent with the high burden of environmental allergens in the study region.

Regarding parental knowledge, only 20% of parents demonstrated good knowledge (score ≥ 8), while 28% had poor knowledge. This finding is comparable to Rana et al. (2016), who reported adequate knowledge in only 22% of parents of asthmatic children in a tertiary care setting in North India.[12] Poor knowledge about inhaled corticosteroid safety (only 38% aware) and spacer usage (44%) were particularly notable gaps. Studies have consistently demonstrated that parental misconceptions about steroids remain the single most significant barrier to ICS adherence.[5,13]

Only 56% of parents exhibited a positive attitude towards inhalation therapy. Fear of steroid side effects was the most prevalent negative attitude (64%), followed by belief in inhaler dependency (44%) and social stigma (38%). These findings are in alignment with a multicenter Indian study by Gautam et al. (2019), which identified steroid phobia as the dominant barrier to inhaler acceptance in 58–70% of parents.[14] The urban-rural disparity in attitude was also evident, with rural parents showing significantly more reluctance, likely attributable to lower education levels and reliance on traditional medical practices.

The assessment of inhaler technique revealed that only 36% of caregivers demonstrated adequate technique (≥ 7/10 steps correct). Critical steps most frequently performed incorrectly included holding breath for 5–10 seconds (34% correct), actuating at the start of inhalation (36%), and rinsing the mouth after ICS (28%). These findings are consistent with national and international data showing that incorrect inhaler technique is pervasive. A systematic review by Sanchis et al. (2016) reported that critical inhaler errors were observed in 70–80% of patients globally.[15]

A statistically significant positive correlation was found between higher parental education and better knowledge, positive attitude, and adequate technique ($p < 0.001$). This underscores the importance of targeted counseling for less educated parents. Structured educational interventions, visual aids, and repeated hands-on training sessions have been shown to improve inhaler technique significantly within a short duration.[8,16]

The strength of this study lies in its comprehensive KAP assessment using validated tools and live demonstration of technique. Limitations include its single-center design, relatively small sample size, and potential recall bias in self-reported data. A larger multicentric study would provide more representative findings.

CONCLUSION

This study demonstrates significant gaps in parental knowledge, attitude, and practice regarding inhalation therapy in childhood asthma. Only 20% of parents had good knowledge, 56% had a positive attitude, and merely 36% demonstrated adequate inhaler technique. Fear of corticosteroid side effects and social stigma remain the predominant barriers to acceptance.

Parental education level was a significant determinant of all three KAP domains. Structured education programs, consistent counseling at every clinic visit, and hands-on inhaler training by healthcare providers are strongly recommended. Integration of asthma education modules in routine pediatric OPD practice can substantially improve parental acceptance and correct utilization of inhalation therapy, ultimately leading to better asthma control and quality of life in affected children.

REFERENCES

1. Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention. Updated 2022. Available at: www.ginasthma.org
2. Paramesh H. Epidemiology of asthma in India. Indian J Pediatr. 2002;69(4):309–312.
3. Pedersen S. Inhalers and nebulizers: which to choose and why. Respir Med. 1996;90(2):69–77.
4. Scarfone RJ, Zorc JJ, Capraro GA. Patient self-management of acute asthma: adherence to national guidelines. Pediatrics. 2001;108(6):e71.
5. Cabana MD, Slish KK, Evans D, et al. Impact of physician asthma care education on patient outcomes. Pediatrics. 2006;117(6):2149–2157.
6. Bender B, Milgrom H, Rand C. Nonadherence in asthmatic patients: is there a solution to the problem? Ann Allergy Asthma Immunol. 1997;79(3):177–186.
7. Dolovich MB, Fink JB. Aerosols and devices. Respir Care Clin N Am. 2001;7(2):131–173.
8. Mehuys E, Van Bortel L, De Bolle L, et al. Effectiveness of pharmacist intervention for asthma control improvement. Eur Respir J. 2008;31(4):790–799.
9. Almqvist C, Worm M, Leynaert B. Impact of gender on asthma in childhood and adolescence. Allergy. 2008;63(1):47–57.
10. Babu SC, Rajan S, Jacob B. Parental perception about inhalation therapy in childhood asthma. Int J Contemp Pediatr. 2014;1(2):86–90.
11. Aggarwal AN, Chaudhry K, Chhabra SK, et al. Prevalence and risk factors for bronchial asthma in Indian adults: a multicentre study. Indian J Chest Dis Allied Sci. 2006;48(1):13–22.
12. Rana K, Mishra M, Khanna R. Assessment of parental knowledge and attitude toward inhalation therapy for childhood asthma. J Pediatr Res. 2016;3(4):345–350.
13. Coutts JA, Gibson NA, Paton JY. Measuring compliance with inhaled medication in asthma. Arch Dis Child. 1992;67(3):332–333.
14. Gautam V, Sapru A, Kumar R. Barriers to inhaler acceptance among parents of asthmatic children in India: a multicentric study. Indian J Allergy Asthma Immunol. 2019;33(1):12–18.
15. Sanchis J, Gich I, Pedersen S; Aerosol Drug Management Improvement Team (ADMIT). Systematic review of errors in inhaler use. Chest. 2016;150(2):394–406.
16. Basheti IA, Reddel HK, Armour CL, Bosnic-Anticevich SZ. Improved asthma outcomes with a simple inhaler technique intervention by community pharmacists. J Allergy Clin Immunol. 2007;119(6):1537–1538.