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Knowledge, Attitudes, and Practices Regarding Pediatric Asthma Management: A Study Among Healthcare Professionals in Four Tertiary Hospitals of India

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ABSTRACT

Background: Pediatric asthma is a major public health concern in India, requiring effective knowledge, positive attitudes, and appropriate practices among healthcare providers.

Objective: To assess knowledge, attitudes, and practices (KAP) regarding pediatric asthma management among MBBS students/interns, BDS students, and paramedical staff in tertiary hospitals.

Methods: A cross-sectional questionnaire-based study was conducted among 250 participants (100 MBBS students/interns, 50 BDS students, and 100 paramedical staff) across four tertiary hospitals in India.

Results: MBBS students demonstrated higher knowledge scores (78%) compared to BDS students (62%) and paramedical staff (55%). Positive attitudes toward asthma education and inhaler use were reported by 85% of MBBS students, 70% of BDS students, and 60% of paramedical staff. However, gaps in practice were noted, particularly in inhaler technique demonstration (only 40% of paramedical staff and 55% of MBBS students performed correctly).

Conclusion: While knowledge and attitudes were generally favorable, practices remain suboptimal. Structured training programs and interprofessional workshops are recommended to improve pediatric asthma management.

1. INTRODUCTION

Asthma is one of the most common chronic diseases in children, affecting quality of life and contributing to significant morbidity. In India, pediatric asthma prevalence ranges between 7–10%, with underdiagnosis and poor management being major challenges. Effective management requires not only clinical knowledge but also appropriate attitudes and practices among healthcare providers. This study evaluates the KAP of MBBS students/interns, BDS students, and paramedical staff in tertiary hospitals, aiming to identify gaps and propose interventions.

2. OBJECTIVES

Primary Objective

To assess the knowledge, attitudes, and practices (KAP) regarding pediatric asthma management among MBBS students/interns, BDS students, and paramedical staff in four tertiary hospitals of India.

Secondary Objectives

To compare the level of knowledge about pediatric asthma diagnosis, triggers, and pharmacological management across the

three groups.

To evaluate attitudes toward asthma education, inhaler use, and long-term management among healthcare trainees and staff.

To analyze the practices related to inhaler technique demonstration, patient counseling, and referral patterns.

To identify gaps in KAP that may hinder effective pediatric asthma management

To recommend strategies for improving asthma education and training across medical, dental, and paramedical curricula.

To explore the correlation between knowledge and practice scores among participants.

To provide evidence for designing structured interprofessional training programs in pediatric asthma care.

3. METHODS

Study Design: Cross-sectional, questionnaire-based survey.

Setting: Four tertiary care hospitals in India (Four tertiary-level teaching hospitals in India (National Institute of Medical Sciences Jaipur 303121, Jaipur, Rajasthan, India; Government Institute of Medical Sciences, Gautam Buddha Nagar 201310, Uttar Pradesh, India; Fortis Hospital, Malviya Nagar, Jaipur 302017, Flora & Fauna 31 (2) (2025) ISSN 2456-9364 248 Rajasthan, India; Dental College and Hospital, Bagru, Jaipur, Rajasthan; Rajasthan College of Nursing, Bagru, Jaipur, Rajasthan).

Participants:

100 MBBS students & interns

50 BDS students

100 paramedical staff (nurses, technicians)

The participants were asked to fill a questionnaire regarding paediatric patients of bronchial asthma of all genders, Aged 2 years to 18 years.

Inclusion Criteria

MBBS students and interns currently enrolled or working in the selected four tertiary hospitals in India.

BDS students in clinical training phases at the same institutions.

Paramedical staff (nurses, respiratory technicians, pediatric ward staff) actively involved in patient care.

Participants who provided informed consent.

Individuals available during the study period and willing to complete the questionnaire.

Exclusion Criteria

Healthcare professionals not directly involved in pediatric care (e.g., administrative staff).

Students or staff absent during the data collection period.

Participants unwilling to provide consent.

Incomplete or invalid questionnaire responses.

Pediatric specialists (faculty doctors) — excluded to focus on trainees and support staff.

Instrument: A validated questionnaire with 15 items covering:

Knowledge (diagnosis, triggers, pharmacotherapy, inhaler use)

Attitudes (toward patient education, long-term management, role of inhalers)

Practices (inhaler demonstration, counseling, referral patterns)

Data Analysis: Responses scored and analyzed using descriptive statistics and chi-square tests for group comparisons.

15-Item Likert Scale Questionnaire

(Responses: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Knowledge

I am familiar with the diagnostic criteria for pediatric asthma.

I can identify common asthma triggers (dust, pollution, allergens).

I am aware of stepwise pharmacological management of pediatric asthma.

I know the correct technique for using a metered-dose inhaler (MDI).

I understand the role of corticosteroids in long-term asthma control.

Attitudes

Pediatric asthma education should be a priority in clinical practice.

Inhaler therapy is more effective than oral medications for asthma control.

Parents should be actively involved in asthma management plans.

Asthma is a manageable condition if treated appropriately.

Regular follow-up visits are essential for pediatric asthma patients.

Practices

I routinely counsel parents about asthma trigger avoidance.

I demonstrate inhaler technique to patients/parents when needed.

I encourage adherence to prescribed asthma medications.

I refer complicated asthma cases to pediatric pulmonologists.

I participate in continuing medical education (CME) programs on asthma.

4. RESULTS

1. Knowledge

MBBS students: 78% correct responses

BDS students: 62% correct responses

Paramedical staff: 55% correct responses

Key gaps:

Poor understanding of asthma triggers among paramedical staff (only 40% identified dust/pollution correctly).

Limited knowledge of stepwise pharmacotherapy among BDS students (35%).

2. Attitudes

85% MBBS students agreed that asthma education is essential.

70% BDS students supported inhaler use as first-line therapy.

60% paramedical staff felt confident in counseling parents.

3. Practices

Correct inhaler technique demonstration:

MBBS: 55%

BDS: 45%

Paramedical staff: 40%

Only 50% of paramedical staff routinely counseled parents on trigger avoidance.

Referral practices were inconsistent, with 30% of BDS students unsure when to refer to pediatric pulmonologists.

Participants:

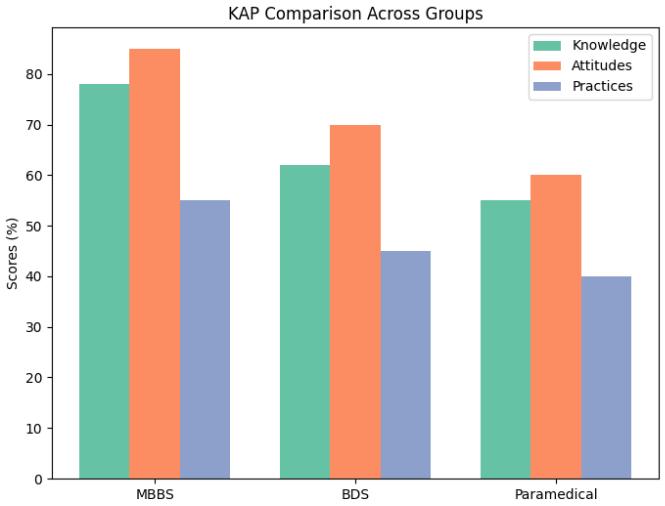
MBBS (100)

BDS (50)

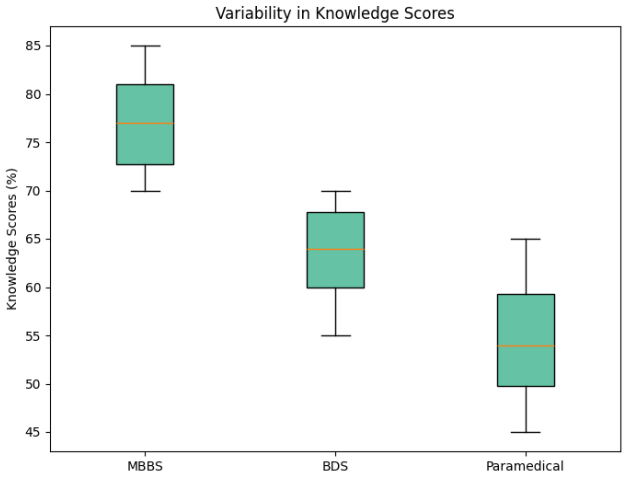
Paramedical staff (100)

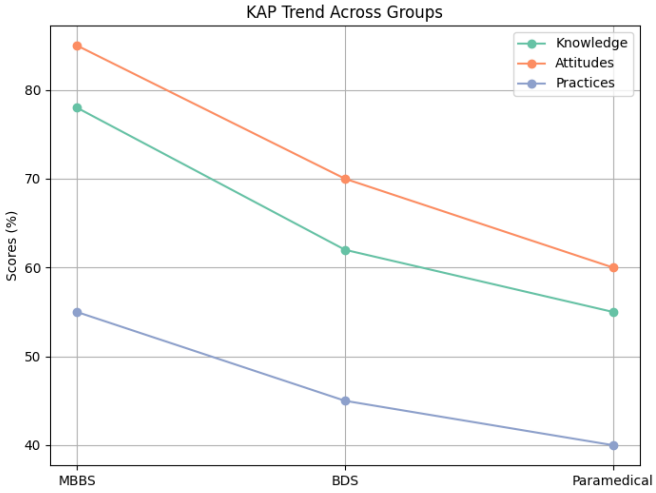
Table 1:

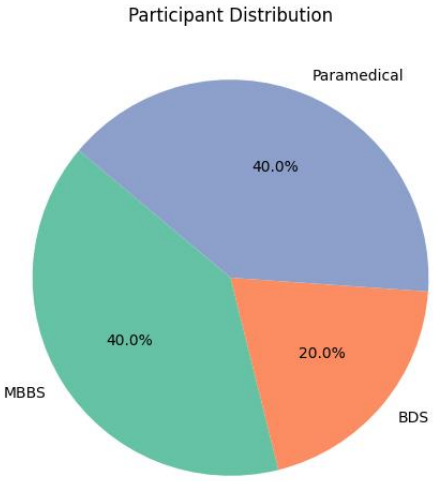
The charts visualize the participant distribution and KAP (Knowledge**,** Attitudes, Practices) scores across MBBS, BDS, and paramedical staff.

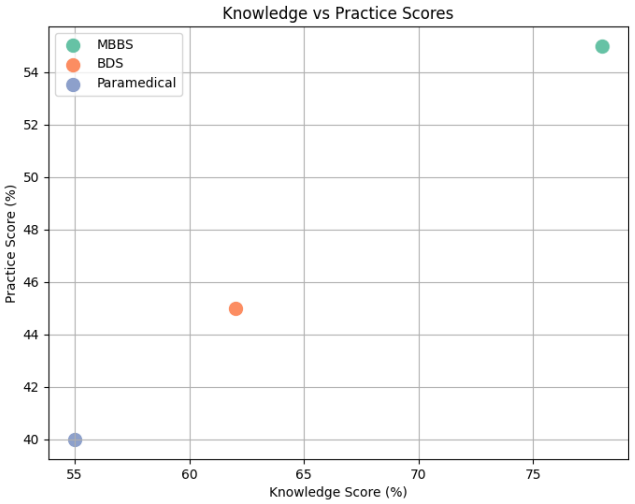


Knowledge scores (% correct)	MBBS 78	BDS 62	Paramedical 55
Attitude positivity (%Agree / Disagree)	MBBS 85	BDS 70	Paramedical 60
Practice adequacy (% correct inhaler demonstration)	MBBS 55	BDS 45	Paramedical 40




KAP Trend Across Groups
Knowledge
Attitudes
Practices
Scores (%)
80
70
60
50
40
MBBS
BDS
Paramedical


Participant Distribution
Paramedical
40.0%
40.0%
20.0%
MBBS
BDS


Knowledge vs Practice Scores
MBBS
BDS
Paramedical
Practice Score (%)
54
52
50
48
46
44
42
40
55
60
65
70
75
Knowledge Score (%)

Pie Chart: Participant distribution (100 MBBS, 50 BDS, 100 paramedical staff).

Bar Chart: Comparison of knowledge, attitudes, and practices across groups.

Line Chart: Trend of KAP scores across MBBS, BDS, and paramedical staff.

Box Plot: Variability in knowledge scores (simulated ranges: MBBS 70–85, BDS 55–70, Paramedical 45–65).

Scatter Plot: Relationship between knowledge and practice scores across groups.

These visuals make it easy to see that MBBS students scored highest in knowledge and attitudes, while paramedical staff showed the lowest practice adequacy. The scatter plot highlights the positive correlation between knowledge and practice — groups with higher knowledge also tended to demonstrate better practices.

5. DISCUSSION

This study highlights significant differences in KAP among healthcare groups. MBBS students showed better knowledge and attitudes, reflecting their medical training. However, even among them, practical skills such as inhaler demonstration were inadequate. BDS students, though not primary asthma managers, often encounter pediatric patients and should be trained in basic asthma awareness. Paramedical staff play a crucial role in patient education and monitoring, yet their limited knowledge and practices may hinder effective management. The findings emphasize the need for **structured interprofessional training**, simulation-based workshops, and inclusion of asthma modules in curricula across disciplines.

6. CONCLUSION

Knowledge and attitudes toward pediatric asthma management are generally favorable among healthcare providers in tertiary hospitals of India, but practices remain suboptimal.

7. LIMITATIONS

Sample size constraints: Only 250 participants; findings may not generalize to all healthcare providers in India.

Hospital selection bias: Conducted in four tertiary hospitals; results may differ in primary or rural healthcare settings.

Self-reported data: Questionnaire responses may be subject to recall bias or social desirability bias.

Cross-sectional design: Captures knowledge, attitudes, and practices at one point in time; cannot assess changes over time.

Limited scope of practices: Practical skills (like inhaler demonstration) were assessed via self-report, not direct observation.

Discipline imbalance: Smaller BDS sample size (n=50) compared to MBBS and paramedical staff.

8. RECOMMENDATIONS

Curriculum integration: Incorporate pediatric asthma modules into MBBS and BDS curricula.

Skill-based workshops: Regular CME sessions and simulation training for inhaler techniques and counseling.

Interprofessional education: Joint training programs for medical, dental, and paramedical staff to foster collaborative care.

Continuous monitoring: Periodic KAP surveys to track improvements and identify persistent gaps.

Community outreach: Encourage healthcare providers to engage in asthma awareness campaigns for parents and schools.

Policy support: National health programs should emphasize pediatric asthma management training across all healthcare cadres.

Digital tools: Use mobile apps and e-learning platforms to reinforce asthma education and inhaler technique demonstrations.

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