

Effect of Parental Education on Outcome of Pediatric Bronchial Asthma

Suhail Saifullah, Asif Ahmed, Reyaz Ahmad Malik .

Original Article**Abstract****Background**

Asthma is an important non communicable disease, which affected an estimated 363 million people in 2023 and caused 442 000 deaths globally. Numerous epidemiological studies have found higher rates of mortality and morbidity among groups with a lower socioeconomic status. Parental education is a significant factor in the compliance of the child's illness with treatment. As with many chronic conditions, disparities in asthma outcomes exist according to race and socioeconomic status.

Methods

The sample consisted of 66 asthmatic children aged between 5-15 years attending the Out Patient Department of Pediatrics in a tertiary care teaching hospital. A modified International Study of asthma and allergies in Children (ISAAC) questionnaire for assessment of objectives of this investigation was administered to the parents.

Results

More educated fathers & mothers had asthma education ($p < 0.05$). Dust & viral colds were presumed to be most common triggers of Bronchial Asthma ($p < 0.05$). Parents with lesser education prevented their asthmatic children from participating in sports activities, while as more educated parents allowed their children to participate in sports activities ($p < 0.05$). Most of the lesser educated parents practiced ill and poor adherence to the important medicines for asthma as compared to more educated parents (P value < 0.05). The data revealed that less literate parents either didn't take their child for a regular check-up to their doctor or just visited 1-3 times a year. In contrast to this, better educated parents visited the doctor 4-6 or more than 6 times a year (P value < 0.05). Less educated parents reported a higher use of SABA in preceeding week, thus indicating a poorly managed & poorly controlled bronchial asthma ($p < 0.05$). they also reported a higher number of Emergency Room visits in preceeding year as compared to better educated parents ($p < 0.05$).

Conclusions

Higher education of parents was associated with a better understanding of Bronchial Asthma in their children, its management & outcome of the treatment.

JK-Practitioner2026;31(3):46-52

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Indexed

EMBASE, SCOPUS, IndMED , ESBCO, Google Scholar besides other national and international databases.

Cite this article as

Saifullah S, Ahmed Asif, Malik RA.
Effect of Parental Education on Outcome of Pediatric Bronchial Asthma.
JK Pract 2026;31(3):46-52.

Introduction

Asthma is an important non communicable disease, which affected an estimated 363 million people in 2023 and caused 442 000 deaths globally (1). It is a chronic, inflammatory, reversible respiratory condition (2). In 2013, asthma was the primary diagnosis for 2.0 million emergency room visits (3). Children with asthma missed 13.8 million school days in total in 2013 (4). These absences have been shown to have many adverse effects on children, including a decrease in academic performance as well as mental and social hindrances (5). In the last 30 years, there has been a steady, relentless increase in the prevalence of childhood bronchial asthma throughout the world. The common characteristics of bronchial asthma include bronchospasm, variable airway narrowing, bronchial hyper-responsiveness, and airway inflammation.

Inequalities in health between socio-economic groups are a major public health concern. Numerous epidemiological studies have found higher rates of mortality and morbidity among groups with a lower socioeconomic status (SES) defined by education, income or occupation within countries and across countries [1–8]. Social inequalities in health are not confined to poor health among the most deprived. Marmot and coworkers [9, 10] reported increasing mortality and morbidity with decreasing socioeconomic status for British civil servants, not considered to be poor by any usual standard. Allergies seem to be one of the exceptions with regard to their association with socioeconomic status.

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Keywords

Bronchial asthma, children, parental education, outcome .

A number of studies performed in industrialized Western countries reported decreased prevalence of eczema [11, 12], hay fever [11, 13], and atopy determined by skin-prick testing and measurements of specific immunoglobulin E [11, 14–16] among children and adults with low SES. Heinrich *et al.* [17] and Kramer *et al.* [18] reported an increased prevalence of eczema, allergic rhinitis and allergy for children from highly educated parents living in the former East Germany, where differences between social groups with regard to income were relatively small. Asthma which is at least partly attributable to allergy [19] does not follow the same pattern as eczema, hay fever and allergic sensitization. Mielck *et al.* [20] reviewed 24 studies on the association between childhood asthma and socioeconomic status and found that the studies did not reveal a clear picture; positive associations were as frequent as negative ones, and most studies showed no association at all. The International Study on Asthma and Allergies in Childhood [21] reported higher prevalence of asthma for urbanised, more “Westernised” countries compared with less developed countries. Differences in susceptibility and differences in exposure were proposed to influence, and to be influenced by, SES and each other [22]. Both exposure and susceptibility may lead to unequal health outcomes, which can then cycle back to affect socioeconomic status [22].

It is well known that parent education helps to reduce the burden of asthma in children. Parental education is a significant factor in the compliance of the child's illness with treatment. As with many chronic conditions, disparities in asthma outcomes exist according to race and socioeconomic status. Black children are at greater risk for hospitalization, even after controlling for socioeconomic status (11). Children of lower socioeconomic status have higher rates of hospitalization independent of their race (12) and report worse health status on self-report measures (13). The reasons for these disparities are not well understood and may be related to severity of illness, environmental exposures, quality of care, and literacy level of their parents. Low literacy is associated with several markers of vulnerability including non-white race and low socioeconomic status (SES) (14). Many researchers have hypothesized that low literacy may be a contributing factor in disparities according to race or socioeconomic status (15, 16 and 17). Parents with low literacy have less knowledge about asthma management (18). Specifically, such parents scored lower on a knowledge test, and also performed worse on metered-dose inhaler technique (18). Parents with low literacy also have higher rates of emergency department visits and lower asthma-related quality of their children's life (19).

Health literacy of parents is another key factor influencing asthma management outcomes of children. Increasing evidence emphasizes the role of health literacy among parents of [children in asthma](#) care quality and control (20) and has revealed that disease education

of parents provide suitable information that not only increases knowledge related to the health of their children but also helps them to take a more active role in the care management of them (21). Asthma education therefore assist the parent to manage the disease in terms of improving asthma patients' knowledge, controlling episodes of asthma, preventing acute and chronic complications, and maintaining or improving health behaviors (23).

Materials and methods

The sample consisted of 66 asthmatic children aged between 5-15 years attending the Out Patient Department of Pediatrics in a tertiary care teaching hospital.

A questionnaire for assessment of objectives of this investigation was administered to the parents. Questionnaire developed by International Study of asthma and allergies in Children (ISAAC) is the most widely accepted. Relevant modifications were made to this questionnaire and used. Each parent's literacy level, occupation and monthly family income were assessed along with other questions related to the disease of their child.

Every patient was included in the study after obtaining informed consent from the parent. Strict confidentiality of data was maintained throughout.

Inclusion Criteria: -

1. Children aged between 5-15 years with symptoms of intermittent dry coughing, wheezing or shortness of breath (but not cough alone) OR recurrent chest tightness OR non focal chest pain (symptoms being worse at night) AND often associated with worsening by physical exertion, or exposure to cold/dry air and airway irritants who were diagnosed to have Bronchial Asthma.
2. Presence of risk factors such as allergic rhinitis, allergic conjunctivitis, atopic dermatitis, food allergies or parental asthma & presence of physician detected wheeze &/or a prolonged exhalation phase, rales, reduced air entry, suprasternal and intercostal retractions.
3. Quick resolution (within 10 mins) or convincing improvement in symptoms and signs with administration of a SABA (e.g levosalbutamol)
4. Fully informed proxy consent and assent wherever appropriate.

Exclusion criteria: -

1. Viral episodic wheeze/ Multiple trigger wheeze/ Acute Bronchiolitis.
2. Chronic aspiration syndromes/ GERD/ Laryngopharyngeal reflux/ Posterior nasal drip/ Rhinosinusitis.
3. Bronchopulmonary dysplasia/Tracheobronchomlacia/Bronchiolitis Obliterans/ Laryngeal webs or stenoses/ Vocal cord dysfunction.
4. Nasal foreign body/ Foreign body aspiration.

5. Congestive heart failure.
6. Pneumonia/ Tuberculosis/ Cystic fibrosis presenting as a wheezy chest.
7. Allergic bronchopulmonary aspergillosis/ Immunodeficiencies/ Immobile Cilia Syndromes/ Interstitial lung diseases.
8. Use of medications causing chronic cough e.g beta blockers, ACE inhibitors.

Definition of explanatory variables:

In the current study, variables that might explain potential associations between parental education and parental knowledge and beliefs about the disease have been termed “explanatory variables”. Potential explanatory variables, such as asthma education, asthma being contagious, asthma being curable, asthma mechanism, triggers of asthma and food avoidance were identified.

Statistical and biometrical analysis:

Statistical and biometrical analysis includes bivariate analysis of the relationship between parental literacy and pediatric asthma outcomes, using chi-squared tests for categorical data. The information obtained was transferred to excel spreadsheet and entered in SPSS version. Data was checked and cleaned. The frequency analysis was done to assess the prevalence of asthma and various factors affecting it. Chi-square test was done for certain factors. P value of <0.05 was considered significant.

Results

This study was conducted on 66 asthmatic children aged between 5-15 years attending the OPD of the Department of Paediatrics at a tertiary care teaching hospital whose parents were invited to participate and complete the questionnaire. All the parents completed the questionnaire after detailed history and clinical examination of their children.

1. Description of the study population:

The following frequency variables were assessed: Mother's Age, Father's Age, Mother's Education, Father's Education, Mother's Job, Father's Job, Family Income, Habitation, Parental Smoking, Main attack symptom, Dr Visits/ year, ER (Emergency Room) visits last year, number of days SABA used last week, Controller medication use, Child taught spacer use.

Frequency distributions of mother's age ranged from 6.1% to 33% for the age group of 20-25 and >35yrs respectively. Frequency distributions of father's age ranged from 39.4% to 66% for the age group of 26-35 and >35yrs respectively. Frequency of parental education differed considerably. The percentage of low parental education, as defined here as illiterate was 16.7% in case of mothers and 1.5% in father's case. The highest percentage (22.7%) was of the matriculate mothers and highest percentage (33.3%) of the graduate fathers respectively. The lowest percentage was of doctorate mothers (1.5%) and of illiterate father group (1.5%).

When it came to the employment distribution, it was observed that mothers were usually home makers (72.7% of total study population) and there was only 1

father as a homemaker. The lowest percentage was that of Govt. employee mother (3%) and the frequency distribution was equally highest for labourer and business class in case of father's job (27.3%). 4.5% of the Families had lowest income of <10k and those with income of >50k were 36.4%. (Table 1)

Table 1: Frequency Distribution/Demographic Data:

Serial Number	Variable	Frequency	Percentage
1.	Mother's Age		
	20-25yrs	4	6.1
	26-35yrs	40	60.6
	>35yrs	22	33.3
	Total	66	100.0
2.	Father's Age		
	26-35yrs	26	39.4
	>35yrs	40	60.6
	Total	66	100.0
3.	Mother's Education		
	Illiterate	11	16.7
	Primary	14	21.2
	Matriculate	15	22.7
	Graduate	15	22.1
	PG	10	15.2
	Doctorate	1	1.5
	Total	66	100.0
4.	Father's Education		
	Illiterate	1	1.5
	Primary	2	3.0
	Matriculate	16	24.2
	Graduate	22	33.3
	PG	20	30.3
	Doctorate	5	7.6
	Total	66	100.0
5.	Mother's Job		
	Home maker	48	72.7
	Skilled	3	4.5
	Business	5	7.6
	Professional	8	12.1
	Govt. emp	2	3.0
	Total	66	100.0

Out of 66 asthmatic children, 39.4% had either a smoking father or smoking mother and 60.6% children had non-smoker parents. The main attack symptom as cough was highest having a frequency distribution of 51.5% followed by fast breathing (30.3%) and wheeze (18.2%). 47% of children were taken to a doctor 1-3 times a year and 16.7% were taken 4-6 times a year. Emergency visits for last year was highest as 1-3 times with 42.4% distribution and lowest percentage (1.5%) was for >6 visits last year. For management of the symptoms, inhaled corticosteroids (ICS) were used in majority of the children (63.6%) and the lowest

percentage was for Montelukast and oral steroids used alone (1.5%). 38 children were taught to use spacers out of 66.

2. Parental education, beliefs and explanatory variables:

Out of 66 children in our study, no illiterate and matriculate mother had asthma education, 1 primary educated mother, 4 graduates, 6 P.G and 1 doctorate Mother had knowledge about asthma. This difference is statistically significant (P value ≤ 0.0001).

Out of 66 children in our study, highest number of Fathers was graduates. It was observed that no illiterate and primary educated father had asthma education, 1 matriculate, 1 graduate, 4 P.G and 6 doctorate Fathers had knowledge about asthma. This difference is statistically significant (P value ≤ 0.05).

Out of all mothers, the ones who believed asthma is contagious were either illiterate or primary pass outs. Though this difference is statistically insignificant (P value > 0.05).

Similarly, out of all fathers, the ones who believed asthma is contagious were matriculate and graduate. Though this difference is statistically insignificant (P value > 0.05).

The belief that asthma is curable was independent of the fact that whether a mother is less or more educated. Almost all of them believed the same with some exceptions. This difference is statistically insignificant (P value > 0.05).

The belief that asthma is curable was more seen among matriculate, graduate and PG fathers as 10, 18 and 19 fathers respectively. This difference is statistically insignificant (P value > 0.05).

Various asthma mechanisms are Constriction of wind pipe, Allergic reactions, Chest muscle tightness and swollen airways. Out of these mechanisms, less educated as well as highly educated mothers believed that the two most common mechanisms for asthma were constriction of wind pipe and allergic reactions. This difference is statistically insignificant (P value > 0.05). Similarly, in case of fathers, less educated as well as highly educated fathers believed that the two most common mechanisms for asthma were constriction of

wind pipe and allergic reactions, also 3 matriculates, 3 Post graduates and 2 scholars believed that chest muscle tightness was also a mechanism to induce asthma attack. This difference is statistically insignificant (P value > 0.05).

Triggers of asthma which were taken into consideration in our investigation were Dust, Exercise, Scents, Viral colds and Pollen/ grass. Amongst these triggers, Dust and viral colds were considered the major trigger by mothers followed by scents and exercise. This difference is statistically insignificant (P value > 0.05).

Amongst these triggers, Dust and viral colds were considered the major trigger by fathers followed by scents and exercise. This difference is statistically significant (P value < 0.05).

Foods which were believed to cause an asthma attack and thus to be avoided by asthmatic children were

banana, ice creams, curd and citrus fruits. Almost all mothers believed that ice creams and curd are to be avoided as well as citrus fruit intake. This difference is statistically insignificant (P value > 0.05) thus the level of education of mothers didn't affect the belief of avoiding certain kind of food by their asthmatic children.

In the same way, ice creams, curd and citrus fruits were believed to be avoided by fathers in our investigation. This difference is statistically insignificant (P value > 0.05). Thus the level of education of fathers didn't affect the belief of avoiding certain kind of food by their asthmatic children.

The data revealed that illiterate, primary pass outs and high school pass outs usually believed sports to trigger asthma hence didn't permit their children with asthma to play sports. While as, graduate, post graduate and doctorate mothers allowed their children to enjoy sports activities. This difference is statistically significant (P value < 0.05).

The data revealed that primary pass outs, high school pass outs and few graduate fathers believed sports to trigger asthma hence didn't permit their children with asthma to play sports. While as, most of the graduates and post graduates and all doctorate fathers allowed their children to enjoy sports activities. This difference is statistically significant (P value < 0.05).

Tablets, nebulizers and inhaler devices were the prescriptions used by parents for their sick children. Out of these, mothers believed nebulizers to be the most effective and quick first-hand treatment for pediatric asthma followed by inhalers as believed by primary and matric pass out Mothers. This difference is statistically insignificant (P value > 0.05).

Fathers believed nebulizers and inhalers to be the most effective and quick first-hand treatment for pediatric asthma followed. This difference is statistically insignificant (P value > 0.05).

Out of 66 mothers, 46 mothers from different education backgrounds believed that inhaled corticosteroids (ICS) reduced the height of children to some extent. This difference is statistically insignificant (P value > 0.05).

Similarly, Out of 66 fathers, 46 Fathers from different education backgrounds believed that inhaled corticosteroids (ICS) reduced the height of children to some extent. This difference is statistically insignificant (P value > 0.05).

3. Practices to manage asthma:

Parents used many practices to manage asthma and keep it under check. Asthma was mainly managed by using ICS (inhaled corticosteroids), nebulizers, adhering to prescribed medicines, use of controller medicines, visiting the doctor, use of SABA (Short-Acting Beta Agonists) and finally ER (emergency room) visits.

ICS was used twice a day by 45 mothers, among which 7 were illiterate, 9 primaries, 14 matriculate, 9 graduate, 5 post graduate and 1 doctorate. Hence the lesser educated ones used it more frequently although, this difference is statistically insignificant (P value > 0.05).

A similar trend was observed in case of Father where ICS was used twice a day by 45 fathers out of 66, among which 1 was primary pass out, 11 matriculate, 19 graduate, 10 post graduate and 4 doctorate. This difference is statistically insignificant (P value >0.05). 3 illiterate, 4 primary pass outs, 8 matriculate, 14 graduate, 9 post graduate and 1 doctorate mother used nebulizer at home. This difference is statistically significant (P value <0.05).

1 primary pass outs, 3 matriculate, 13 graduate, 18 post graduate and 4 doctorate Fathers used nebulizer at home. This difference is statistically significant (P value <0.05).

11 illiterate, 13 primary pass outs, 10 matriculate, 7 graduate, 3 post graduate and zero doctorate mothers practiced ill and poor adherence to the important medicines for asthma. This difference is statistically significant (P value <0.05).

1 illiterate, 2 primary pass outs, 14 matriculate, 18 graduate, 8 post graduate and 1 doctorate father used nebulizer at home. This difference is statistically significant (P value <0.05).

The data revealed that illiterate mothers, primaries and matriculates either didn't take their child for a regular check-up to their doctor or just visited 1-3 times a year. In contrast to this, graduates and above graduates visited the doctor 4-6 or more than 6 times a year. This difference is statistically significant (P value <0.05).

The data revealed that illiterate fathers, primaries and matriculates either didn't take their child for a regular check-up to their doctor or just visited 1-3 times a year. In contrast to this, graduates and above graduates visited the doctor 4-6 or more than 6 times a year. This difference is statistically significant (P value <0.05).

The controller medicine used at home in case of a sudden asthma attack were either none, or ICS, or montelukast, or ICS + montelukast or oral steroids. In majority of cases, ICS or ICS + montelukast was used by mothers to deal with it. Below matric and matric pass mothers used both ICS as well as montelukast simultaneously where as graduates and above graduates used only ICS. Further, oral steroids were used by only uneducated mothers. This difference is statistically significant (P value <0.05).

ICS (42) or ICS + montelukast (14) was used by fathers as a controller medicine. This difference is statistically significant (P value <0.05).

6 graduate mothers and 6 post graduate mothers didn't use SABA last week. 1 illiterate, 2 primary pass outs, 10 matriculate, 8 graduate and 2 post graduate mothers used SABA 1-3 times last week. This difference is statistically significant (P value <0.05).

2 graduate mothers, 9 post graduate and 3 doctorate fathers didn't use SABA last week. 1 primary pass outs, 2 matriculate, 10 graduate and 8 post graduate fathers used SABA 1-3 times last week. 1 illiterate, 1 primary pass outs, 14 matriculate, 10 graduate and 3 post graduate fathers used SABA 4-7 times last week. This difference is statistically significant (P value <0.05).

4 illiterate, 7 primary pass outs, 9 matriculate, 6

graduate, 2 post graduate and zero doctorate mothers needed 1-3 Emergency room visit for their child last year. 5 illiterate and 7 primary educated mothers required ER visits 4-6 times last year and only 1 mother who was uneducated needed to visit >6 times to ER last year. This difference is statistically significant (P value <0.05).

1 primary pass out, 6 matriculate, 11 graduate, 9 post graduate and 1 doctorate fathers needed 1-3 Emergency room visit for their child last year. 8 matriculate, 5 graduate, 1 post graduate Fathers required ER visits 4-6 times last year and only 1 father who was primary pass out needed to visit >6 times to ER last year. This difference is statistically significant (P value <0.05)

Discussion

Several studies have been conducted illustrating the effectiveness of asthma education programs (21,22). One systematic literature review concluded that educating the patient and/or the caregivers about the proper management of asthma shows statistically significant reductions in missed school days and Emergency room visits. This study provides evidence that parents of children with asthma harbor considerable misconceptions about the disease. More than half of the surveyed parents expressed a lack of understanding or confusion about asthma etiology. In recent decades, very few studies have been found in our databases highlighting the parental perceptions and practices towards asthma management. To understand the present lacuna in asthma control and management, the health care system and parental education are the key component, which needs to be improved in order to achieve better asthma control.

This study provides valuable insight and critical cognizance about perceptions and various practices adopted by Kashmiri parents in asthma management. In our society the diagnosis of asthma is viewed as a stigma. Fifty per cent of those interviewed in this study confessed that they hesitated to disclose to others that their child suffered from asthma. Parents used terms like allergy, chronic cough, chest congestion, etc. to refer to their child's illness.

Our results revealed that only 18.2% of the parents had a good amount of knowledge about asthma while the majority of parents (81.8%) lacked such knowledge. One-third of the parents believed asthma to be contagious, which was more common amongst parents with poor education background, although it is difficult to postulate the basis of this belief, the consequences, as far as the child is concerned, are probably serious. In many families the affected child was not allowed to share food with the other siblings. It is reasonable to presume that such actions on the part of the mother make the asthmatic child feel different or inferior to other children by repeatedly reminding him of the fact that he has asthma. It remains to be studied whether this contributes to behavioral disturbances in asthmatic children. Parents who were graduates or more than that educated believed it to be a non-contagious disease. Hence, the differences were statistically significant

which shows that there was an association between the idea of asthma being contagious and the level of education a parent had. The belief that asthma is curable was independent of the fact that whether a mother is less or more educated. Almost all of them believed the same with some exceptions. This difference is statistically insignificant, however in case of fathers, educated ones believed it to be curable as compared to uneducated ones. Educated parents had a clearer concept of the mechanism behind an asthma attack. However, less educated as well as highly educated mothers and fathers believed that the two most common mechanisms for asthma were constriction of wind pipe and allergic reactions. So, there was no significant correlation observed between parental education and knowledge of asthma mechanism.

Triggers of asthma which were taken into consideration in our investigation were Dust, Exercise, Scents, Viral colds and Pollen/ grass. There was no significant correlation between trigger of asthma and parental education. Amongst these triggers, dust and viral colds were considered a potent trigger factor by mothers as well as fathers, followed by scents and exercise. To have better treatment outcomes, it is important to explain to the parents that asthma is not solely hereditary, but environmental factors play a major role in susceptibility and triggering of attacks.

Parents described a variety of factors which could precipitate an attack of asthma in their child. These were foods, cold weather, change in season, exertion and others. Most parents were restricting certain foods in their child's diet because of these beliefs. These foods were banana, curd, ice creams and orange (which are considered to be cold). Such beliefs were not restricted to any particular education group & hence educated and uneducated parents did not differ significantly in this regard. Parents with higher education allowed their children to exert and play sports but the less educated and uneducated parents were usually found reluctant to permit their asthmatic child to participate in sports activities. Hence, there was a significant relation between parental education and the belief of sports to trigger asthma.

In order to enhance the level of perceptions among asthmatic patients and caregivers, education should include knowledge about asthma and its management, as there might be misperceptions about the use of inhalers and the safety of inhaled corticosteroids (ICS). Parents often express concern about the safety of asthma medications. Furthermore, parental concern regarding medication dependence was reported as a reason for weaning children off the drugs. In our study, the majority 46 (69.7%) of parents with asthmatic children were concerned about the side effects of ICS in reducing the height which may be related to lack of knowledge about asthma, lack of partnership in the management, inappropriate expectations, and cultural issues. It is widely known that improving adherence to inhaled corticosteroids (ICS) in children with asthma is probably the most effective method through which healthcare

providers can reduce the burden of uncontrolled asthma. However, unfortunately the majority of parents with asthmatic children from Asian countries view ICS administration to their children as a means of becoming addicted to or dependent on inhaler use, a misconception possibly related to modern day inhalational drug abuse and steroid abuse driven by extensive media campaigns. These concerns may likely prompt the children to miss the prescribed doses of inhaled steroids with increased problems of non-adherence to treatment as well as higher number of consequent hospitalizations.

Regarding parental practices toward asthma control, inhalers, nebulizers, SABA, controller medicines etc. were used. Nebulizers were mostly used by higher educated parents. 28.6% primary educated mothers, 53.3% matriculates, 93.3% graduates, 90% post graduates and 100% doctorates used nebulizers at home. Also, 18.8% matriculates, 59.1% graduates, 90% post graduates and 80% doctorate fathers used nebulizers. Thus, there was a correlation between using nebulizer at home and parental education.

It was also observed that educated parents adhere to the prescribed regimen as compared to less educated ones. 100% of illiterate mothers, 92.9% of primary pass outs, 66.7% of matriculates, 46.7% of graduates and 30% of post graduate mothers didn't adhere to medicine properly. 100% of illiterates, 100% of primary pass outs, 87.5% of matriculate, 81.8% of graduates, 40% of post graduates and 20% of doctorate fathers didn't adhere to medicine properly. Moreover, parents with lower family incomes and a higher number of children were concerned more about medication dependency and parents with lower education levels were more concerned about the side effects of inhaled steroids compared with more highly educated parents.

This finding can be considered as lack of awareness and under utilization of medical facilities in management and control of asthma, which might also explain increased asthma prevalence among lower socioeconomic groups with education also being a determinant of asthma risk. Parental education is crucial for successful treatment of this disease, and it is important that the treating physician emphasizes the role of effective medications in asthma control. It is necessary to inform parents/children about the long-term course of asthma and point out the safety of prolonged inhaled steroid use. The data revealed that illiterate fathers and mothers, primaries and matriculates either didn't take their child for a regular check-up to their doctor or just visited 1-3 times a year. 42.9% graduates, 28.6% post graduates and 14.3% doctorate mothers took their asthmatic child >6 times per year to the doctor and 28.6% graduates, 57.1% post graduates and 14.3% doctorate fathers took their asthmatic child >6 times per year to the doctor. This shows that less educated parents didn't take an asthmatic child serious enough to be shown to the doctor for a check-up.

34.5% illiterate mothers, 41.4% primaries and 13.8% matriculates used SABA the highest number of times last week (4-7). 42.9% graduates and 42.9% post

graduate mothers didn't use SABA at all. This survey showed that children of uneducated and less educated parents more often used inhaled β -agonists and inhaled steroids for asthma control, as was shown in other studies which also suggest their lack of efficiency in keeping the asthma of their child under check.

There was only 1 doctorate mother and she didn't require the need for ER for her child last year. Out of total 10 post graduate mothers, only 2 visited 1-3 times and 1 visited 4-6 times while as rest of the 7 mothers didn't visit ER at all. There were 15 graduates among whom 6 required 1-3 visits and rest of them didn't visit ER. Out of 11 uneducated mothers, 4 visited 1-3 times and 5 visited 4-6 times last year. 7 primary pass out mothers needed to take their asthmatic child 1-3 times to ER and 7 of such mothers visited 4-6 times to ER. Out of total 5 doctorate fathers, only 1 visited ER 1-3 times and rest of the 4 fathers didn't visit ER at all. There were 20 post graduates and only 9 required 1-3 ER visits for their child and the remaining ones didn't need the visit. 50% of matriculate fathers needed 4-6 ER visits last year. This suggests that there was a significant association between the two factors and educated parents didn't require emergency visits as frequent as the less educated ones.

Conclusions

Higher education of parents was associated with a better understanding of Bronchial Asthma in their children, its management & outcome of the treatment. These children were using ICS as advised. They had better follow up with doctors. Their bronchial asthma was better controlled & thus there was a lesser need for rescue SABA therapy in them & they had fewer Emergency Room visits.

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