# Behavioral problems in children with asthma and their association – A cross-sectional study

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## ABSTRACT

**Background:** Asthma is a chronic illness involving the airways in the lungs and children are more susceptible. A strong link between asthma and psychiatric illnesses has been established. Hence, psychological factors govern its management. **Objective:** The objective of the study was to assess the self-esteem and behavior of asthmatic children. **Materials and Methods:** The cross-sectional study was conducted at the Department of Pediatrics of a Tertiary Hospital of South India. Asthmatic children between 6 and 16 years of age, diagnosed as mild to moderate, visiting the asthma clinic were included in the study. The respondents could either answer the questionnaire or point out their choices or indicate them verbally. Culture-Free Self-Esteem Inventory (CFSEI) by Battle (1981) was used for the study. Child Behavior Checklist by Achenback and Ederirock (1983) is designed to record in a standardized format the behavioral problems and social competencies of children, as reported by parents/guardians. **Results:** A total of 70 children were enrolled in the study. There were 30 children each in the case and control group, with regular follow-ups to the clinic. The majority of the children belonged to the age group of 10–13 years (63.3%) in the case and 10–14 years (63.03%) in the control group. Among the cases, about 50% had at least 3 wheezing episodes. Among the number of inpatient admissions, 14 were admitted once, four were admitted twice, and one child had three admissions. The school absenteeism in case varied from 1 to 6 weeks per academic year. Mean self-esteem scales for boys were 10.36 in case and 13.05 in control ($p<0.05$) and the results were statistically significant. Parental self-esteem showed significant differences between the two groups. Mean self-esteem scales for girls were 2.273 in general self-esteem and 0.132 in social self-esteem. These results had a highly significant correlation. **Conclusion:** Asthmatic children were found to have low self-esteem and those with chronic diseases had both higher depression score and low self-esteem. The treating physicians should identify the associated psychological issues in asthmatic cases and address them as needed.

**Key words:** *Asthmatics, Behavioral problems, Children, Self-esteem*

Asthma is a chronic illness involving the airways in the lungs. When the symptoms are triggered, the inflammation in the airways increases and surrounding muscles tighten as explained by the American Academy of Allergy Asthma and Immunology [1], and this makes it difficult for the child to breathe. Children are more prone to develop asthma and strong family history is often noted. Asthma can develop before the age of 5 years in the majority of the cases. Most often, asthma is associated with allergic reactions and is known as allergic asthma.

Since the 1970s, the prevalence of bronchial asthma has continuously shown an increase and presently affects about 4–7% of the people worldwide. The prevalence of childhood asthma varies regionally. In 1999, 20,000 children in the city of Bengaluru under the age group of 18 years showed a prevalence of 29.5%, according to a hospital-based study [2]. A study conducted by Feitosa *et al*. showed that 19.26% of the children presented symptoms of asthma and 35% were classified as having clinical behavioral problems [3].

Psychological factors may influence the symptoms and management of asthma. The notion that emotional stress can precipitate or exacerbate acute and chronic asthma [1] has been recognized anecdotally for many years. Faulty symptom attribution, adoption, or rejection of the sick role and low self-esteem are psychological barriers that may negatively impact treatment adherence.

Self-esteem is a product of the influences of culture, society, family, and interpersonal relationship [4]. It is an individual's evaluation of his/her self-worth [5]. The association between asthma and childhood behavior problems has been identified, mainly through higher behavioral problem scores in asthmatic children [6-8]. Further studies have proved the role of psychological problems in the symptom and severity of asthma, indicating that children with high behavioral problems

show a greater number of days of the wheezing problem (about 18 days/ year) [9].

The association of asthma with the psychological factors has been evaluated for long. Interpretation of asthma symptoms as well as the manifestation of measurable changes in immune and physiologic markers of asthma is influenced by the central cognitive process [10]. The objective of the study was to assess the self-esteem of children and their behavior as reported by the parents whose children were asthmatic.

## MATERIALS AND METHODS

The cross-sectional study was conducted for a year at the Department of Paediatrics at a Teaching Hospital of South India between April 2016 and 2017. The children between the age group of 6 and 16 years, attending asthma clinic and diagnosed as mild to moderate asthmatics were included for the study. A written informed consent was taken from the parents/guardians of the enrolled children. The study was approved by the Institutional Ethical Committee. The study excluded the children who had psychiatric or systemic illness, chronic pulmonary disorders and who were irregular with follow-up visits. A sample size of 60 subjects was taken with 30 each in the case and control group. The duration of asthma varied widely, ranging from 6 months to 6 years.

A semi-structured questionnaire was used to gather information about demographic variables, treatment details, and disruption in schooling. The assessment was done in a counseling room for both parents and children who had the knowledge of both English and Kannada. The respondents could either fill the questionnaire or point out their choices or indicate them verbally.

### Self-esteem Measure

Culture-Free Self-Esteem Inventory (CFSEI) by Battle (1981) was used for the study. It is a 60-item questionnaire classifiable into five subscales, namely, general self-esteem, social/peer-related self-esteem, academic/school-related, parents/home-related self-esteem, and life scale indicating defensiveness. The subscales were derived using factor analysis. The scales can be used on children who are in first grade. The highest score is 50 on the first four subscales combined and on the lie scale 10. The items in the instrument are divided into two groups – those that indicate high self-esteem and those that indicate low self-esteem. The child marks each item, yes or no. A higher score indicates higher self-esteem. The total score is obtained by summing the item scores. The maximum possible score is 50, excluding the lie scale. The maximum score on the lie scale, which indicates defensiveness, is 50.

Child Behavior Checklist (CBCL) was developed by Achenback and Ederirock (1983). It is a validated scale that was designed to record the behavioral problems and social competencies of children aged 4–16 years in a standardized format, as reported by parents and others who know the child well. The items are numbered 1–113, but item 56 includes physical problems (a) through (h), making the total number of specific problems of listed behaviors as 118.

Data regarding child behavior and self-esteem were entered using SPSS. Statistical measures for significance level and Pearson's correlation coefficient were undertaken to examine the relationship between self-esteem and problem behavior in children.

## RESULTS

A total of 70 children were enrolled in the study. There were six from the case group and four from the control group who were dropped out due to various reasons. There were 30 children in the case group and 30 children in the control group. In the age distribution of the samples, majority of the children belonged to the age group of 10–13 years (63.3%) in the case and 10–14 years (63.03%) in the control group. Gender distribution of the case group showed, 63% of the cases comprising of boys (n=19) and 37% of girls (n=11). Gender distribution of the control group showed 60% of the control samples being boys (n=18) and 40% of the control group being girls (n=12).

Graph 1 shows the duration of illness in the cases which ranged from 2 months to 8 years.

Most of the children (about 50%) had at least three wheezing episodes, but the number varied widely from 1 to 12 episodes (Graph 2). Among the children with inpatient admissions, 14 children were admitted once, four children had two admissions, and one child had three admissions.

In boys, significant differences were found for general self-esteem where the maximum mean value was 10.36 in case and 13.05 in non-asthmatic ($p<0.05$). In the domain of parental self-esteem, significant differences were found between the two groups. With regard to girls, the maximum mean value in the domain of general self-esteem was 2.273 and the least was 0.132 ($p<0.05$) (Table 1).

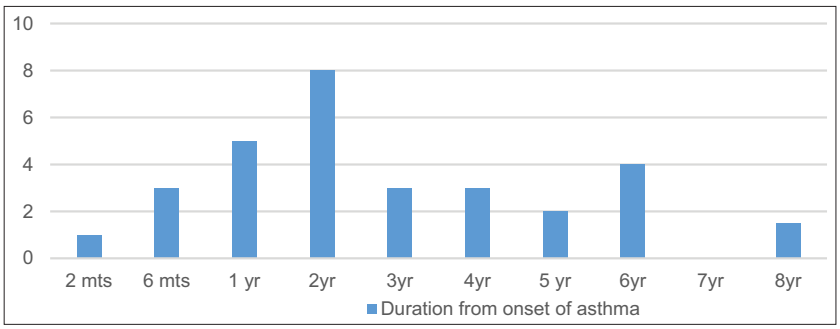
The values on CBCL indicated a highly significant difference in the behavior of the children of both cases and normal children, as reported by their parents (Table 2).

The correlation values indicate no significant relationship between the two variables on any dimensions of self-esteem. Except academic self-esteem in case of asthmatics, all other domains showed a negative correlation (Table 3).

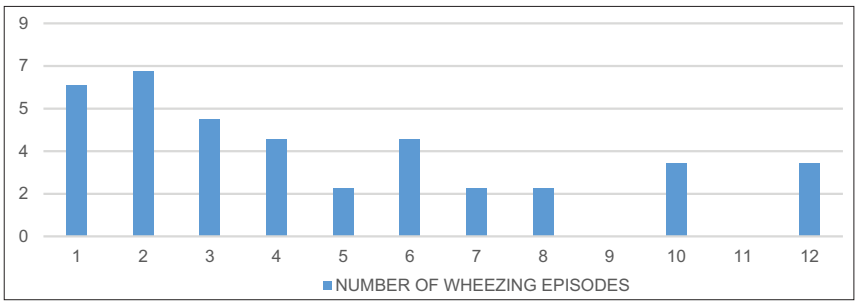
A significant correlation existed between social self-esteem and general self-esteem, and between parental self-esteem and general self-esteem.

## DISCUSSION

The association between behavioral problems and asthma found in our study demonstrates that the prevalence was greater among children who presented with behavioral problems in comparison to those without such problems. The obtained results are in line with the earlier literature by Ortega *et al*., Klinnert *et al*., and Calam *et al*., who reported a greater prevalence of behavioral problems in asthmatic children when compared to the groups of non-asthmatic children [6,11,12].




**Graph 1: The duration of illness in cases**




**Graph 2: The number of wheezing episodes in cases**

**Table 1: The mean and SD of the sample on self-esteem scale**

| Variables | Cases | | Control | | t-value | | Sig. | | p value |
|---|---|---|---|---|---|---|---|---|---|
| | Boys n=19 | Girls n=11 | Boys n=18 | Girls n=12 | Boys | Girls | Boys | Girls | |
| General self-esteem | | | | | | | | | |
| M±SD | 10.36±3.0 | 12.18±1.8 | 13.05±2.5 | 14.41±2.7 | 2.945 | 2.273 | 0.006 | 0.034 | <0.05* |
| Academic self-esteem | | | | | | | | | |
| M±SD | 6.89±1.2 | 7.45±1.4 | 7.72±1.9 | 7.50±2.1 | 1.507 | 1.507 | 0.143 | 0.954 | >0.005 |
| Social self-esteem | | | | | | | | | |
| M±SD | 6.10±1.7 | 6.72±1.3 | 7.00±1.5 | 6.83±2.3 | 1.644 | 0.123 | 0.109 | 0.896 | >0.05 |
| Parental self-esteem | | | | | | | | | |
| M±SD | 6.36±1.9 | 6.81±1.5 | 7.94±1.5 | 7.41±1.3 | 2.736 | 0.984 | 0.010 | 0.336 | <0.05* |
| Lie-score | | | | | | | | | |
| M±SD | 4.13±2 | 4.54±1.3 | 4.16±1.5 | 3.33±1.4 | 0.244 | 2.020 | 0.808 | 0.056 | >0.05 |

**SD: Standard deviation**

**Table 2: Scores on CBCL between the case and control group**

| Measures | Cases | | Control | | "t"-value | | Significance | | p value |
|---|---|---|---|---|---|---|---|---|---|
| | Boys (n=19) | Girls (n=18) | Boys (n=18) | Girls (n=12) | Boys | Girls | | | |
| Mean±SD | 43.47±14.6 | 43.81±21.3 | 27.5±15.5 | 23.08±12.6 | 3.215 | 2.859 | 0.003 | 0.009 | <0.001** |

**Df=29, p<0.05*. CBCL: Child Behavior Checklist, SD: Standard deviation**

**Table 3: Correlation values of self-esteem behavior checklist of the children**

| Variables | Child behavior checklist | |
|---|---|---|
| | Cases | Control |
| General self-esteem | –0.202 | –0.684 |
| Social self-esteem | –0.033 | –0.256 |
| Academic self-esteem | 0.005 | –0.511 |
| Parental self-esteem | –0.015 | –0.136 |
| Lie | 0.149 | 0.303 |
| Total score | –0.121 | –0.608 |

A study by Weil *et al*. reported an increase in asthma severity associated with behavioral problems [8]. One possible explanation for such results was that living with childhood behavioral problems might affect the management of asthma symptoms and suggested difficulty in following the treatment plan, thus increasing functional impairment and the severity of the disease.

Living with asthma morbidity is a risk factor for behavioral adjustment problems and Mc Quaid *et al*. asserted that this relationship was of a bidirectional nature, even circular [13]. On the contrary, Ortega *et al*. study suggested that understanding the

**Table 4: Correlation between measures of self-esteem subscale scores in the case group**

| Measures | General self-esteem | Social self-esteem | Academic self-esteem | Parental self-esteem | Lie score |
|---|---|---|---|---|---|
| Social self-esteem | 0.490** | | | | |
| Academic self-esteem | 0.285 | 0.074 | | | |
| Parental self-esteem | 0.402* | 0.188 | 0.097 | | |
| Lie score | –0.250 | –0.059 | –0.092 | –0.476 | |
| Total self-esteem scores | 0.889** | 0.652** | 0.461 | 0.614** | –3.347 |

**p<0.01, *p<0.05

relationship between the child mental health and asthma required an integrated model incorporating environmental factors, parental mental health, and psychological problems in children [11].

The present study on self-esteem scale found a significant difference in domains of general self-esteem and parental self-esteem. The study also indicates asthmatic children to have low self-esteem. Siegel *et al*. found that children with chronic illness had higher depression score too [14]. Hoare *et al*., in their study, observed that children with chronic illness were found to have high childhood behavioral problem scores than normal subjects [15].

Some of the common behavioral and emotional problems reported in asthmatic children were restlessness, argumentative, self-conscious, secretive, and physical problems with no medical cause. There was a complaint of 50% of them that no one loves them, had temper tantrums, impulsive behavior, were stubborn and irritable. There were 42% children who were disobedient at home, bit fingernails, with sudden changes in mood and feelings. There were 33% children who were too dependent, shy, fearful, and anxious and 25% felt lonely, confused, withdrawn, worried, and repeated certain acts with compulsion and nervousness. There were 17% with daydreams, strange ideas, suspicion, and inferiority complex.

The correlation coefficient between self-esteem and CBCL indicated a negative relationship between two variables in both case and control group except in the domain of academic self-esteem and parental self-esteem. On the correlation between measures of self-esteem in clinical cases, a highly significant correlation existed between social self-esteem and general self-esteem, and between parental self-esteem and general self-esteem.

In interpreting the findings of the study, it is important to note that child behavior was obtained from the report of parents. Parents of asthmatic cases need to be guided professionally to manage child calmly with patience.

The study had a few limitations. The sample size of the study was small and the results should be interpreted with caution. The sample was collected from one single site and so different sites should be included to generalize the study.

## CONCLUSION

The results of the study indicate that children with asthma have low self-esteem, specifically in the domain of general self-esteem and parental self-esteem. Behavioral problems are associated with the prevalence of asthma. These problems can be substantially reduced by parental approach, management of behavior problems, and education to both parents and asthmatic children.

## REFERENCES


1. Sandberg S, Paton JY, Ahola S. The role of acute and chronic stress in asthma attacks in children. Lancet 2000;356:982-7.
2. Paramesh H. Epidemiology of asthma in India. Indian J Pediatr 2002;69:309-12.
3. Feitosa CA, Santos DN, Barreto do Carmo MB, Santos LM, Teles CA, Rodrigues L, *et al*. Behavior problems and prevalence of asthma symptoms among Brazilian children. J Psychosom Res 2011;71:160-5.
4. Rosenberg M. Conceiving the Self. New York: Basic Books; 1979.
5. Von Der Haar CM. Social Psychology: A Sociological Perspective. 1st ed. New Jersey: Pearson; 2005.
6. Klinnert MD, Nelson HS, Price MR, Adinoff AD, Leung DY, Mrazek DA. Onset and persistence of childhood asthma: Predictors from infancy. Pediatrics 2001;108:E69.
7. Alati R, O'Callaghan M, Najman JM, Williams GM, Bor W, Lawlor DA. Asthma and internalizing behavior problems in adolescence: A longitudinal study. Psychosom Med 2005;67:462-70.
8. Weil CM, Wade SL, Bauman LJ, Lynn H, Mitchell H, Lavigne J. The relationship between psychosocial factors and asthma morbidity in inner-city children with asthma. Pediatrics 1999;104:1274-80.
9. Wamboldt MZ, Schmitz S, Mrazek D. Genetic association between atopy and behavioral symptoms in middle childhood. J Child Psychol Psychiatry 1998;39:1007-16.
10. Lieshout RJ, MacQueen G. Psychological factors in asthma. Allergy Asthma Clin Immunol 2008;4:12-28.
11. Ortega A, Goodwin R, McQuaid E, Canino G. Parental mental health, childhood psychiatric disorders, and asthma attacks in island Puerto Rican youth. Ambul Pediatr 2004;4:308-15.
12. Calam R, Gregg L, Simpson A, Simpson B, Woodcock A, Custovic A. Behavior problems antecede the development of wheeze in childhood: A birth cohort study. Am J Respir Crit Care Med 2005;171:323-7.
13. McQuaid E, Kopel S, Nassau J. Behavioral adjustment in children with asthma: A meta-analysis. J Dev Behav Pediatr 2001;22:430-49.
14. Seigel WM, Golden NH, Gough JW, Lashley MS, Sacker IM. Depression, self-esteem, and life events in adolescents with chronic diseases. J Adolesc Health Care 1990;11:501-4.
15. Hoare P, Mann H. Self-esteem and behavioural adjustment in children with epilepsy and children with diabetes. J Psychosom Res 1994;38:859-69.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