

Correlation of financial burden with severity of asthma in children

Lahiri K.¹, Najmuddin F.²

¹Dr. Keya Lahiri, Professor, ²Dr. Fehmida Najmuddin, Assistant Professor, both authors are affiliated with Department of Pediatrics, Dr. D.Y. Patil Medical College & Hospital, Nerul, Navi Mumbai, Maharashtra, India.

Corresponding Author: Dr. Fehmida Najmuddin, Department of Paediatrics, Dr. D.Y. Patil Medical College & Hospital, Nerul, Sector-5, Navi Mumbai, 400706, Maharashtra, India. Phone No: 09920030533, Email: fehmidanc9@gmail.com

Abstract

Introduction: Urbanisation is causing a rise in the financial burden of Asthma in children and it varies with the disease severity. Asthma has a low public health priority and is often under diagnosed and treated inappropriately. **Objectives:** Our aim was to correlate the financial burden of disease costs with Asthma classification. **Methods:** It was a prospective study of 38 patients attending paediatric pulmonology clinic in a tertiary care hospital. Details were entered in a predesigned proforma and institutional ethics committee approval was taken. Quantitative statistical analysis using mean, standard deviation and applying one way ANNOVA test was done. **Results:** Intermittent, mild and moderate persistent asthma were 8 (21.05%), 21(55.26%) and 9(23.68%) respectively. Majority of the patients; 19 (50%) belonged to the upper middle class. The direct mean costs across severities ranged between INR 5700-7400 for general practitioner consultation, INR 3550-10300 for emergency visits, INR 4500-9000 for investigations and INR 7000-13700 for medications. The indirect costs ranged between INR 9000-19800 on daily wages lost, INR 2900-8700 on travel expenses (significant p value<0.014) between mild and moderate persistent asthma. Mean costs on food ranged between INR 1700-3200, tuitions INR 3000-5700 and miscellaneous expenditure being INR 2000-8300. The percentage of annual income spent was 28.76%, 40.99% and 60.64% in intermittent, mild and moderate persistent asthma respectively. **Conclusion:** Early referral, diligent counselling, physician and parents education along with good compliance would impart effective control and thereby reduce economic burden.

Key words: Asthma, Economic burden, India, Paediatrics

Introduction

Paediatric asthma has emerged as the most common non-communicable cause of heightened morbidities. Increasing prevalence coupled with urbanisation in paediatric asthma has escalated the financial burden [1,2]. The current literature on financial impact of paediatric asthma in India is lacking and hence a diligent review system has to be devised for an effective reduction in the overall costs [3].

The lack of supporting data from developing countries on the financial burden of asthma compelled us to highlight the disease burden in our paediatric pulmonology out-patient department [4]. The disability - adjusted life years (DALYS) per year due to asthma is 13.8 million as per the world health organisation [5]. Paediatric asthma is one of the major reasons for school absenteeism which in turn increases the indirect costs [6]. In comparison to the adult asthmatics, expenses

associated in paediatric asthma is higher due to lack of physician and parents awareness, misclassification, use of antibiotics and increased visits to day care centres [7,8]. The importance of research on the economic burden of asthma, comes from the fact that, though there is increased prevalence in developed countries, the developing countries account for 80% of asthma deaths worldwide [9]. Studies done across various states in India, itself have shown higher rate of prevalence in some compared to the others, therefore we need to study the financial impact area wise to devise an effective state appropriate budget [10]. As compared to the normal population, asthmatic individuals are twice more prone to develop poor physical and mental health each year, thereby adding on to their individual financial costs [11].

Methods and Materials

Aims and objectives: To correlate the financial burden of the disease costs with asthma classification.

Manuscript received: 18th April 2018
Reviewed: 28th April 2018
Author Corrected: 5th May 2018
Accepted for Publication: 9th May 2018

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Place and Type of study: It was a prospective study of 38 patients; 25 (65.8%) males and 13(34.2%) females attending paediatric pulmonology clinic in a tertiary care hospital.

Sample collection: Details were entered in a predesigned proforma, informed consent was taken and information including their personal information, classification of asthma according to GINA (Global Initiative Of Asthma) guidelines and current therapy was noted. Further the questionnaire included direct (general practitioner consultation, emergency visits investigations medications) and indirect costs (travel,

food expenses, tuitions, daily wages loss, miscellaneous). An institutional ethics committee approval of our hospital was taken.

Sampling method: Quantitative statistical analysis using mean, standard deviation and one-way ANNOVA test was done.

Inclusion Criteria: Children with Asthma and Parents/ Care takers on regular follow-up. **Exclusion criteria:** Parents / care- givers not consenting to the study and asthmatic children not compliant or on regular follow-up.

Results

The study comprised of 38 patients; 25(65.8%) males and 13(34.2%) females. Intermittent, mild and moderate persistent asthma were 8(21.05%), 21(55.26%) and 9(23.68%) respectively (Fig.1). The asthma classification was as per the GINA guidelines. Majority of the patients 19(50%) belonged to the upper middle class. The direct mean costs across severities ranged between INR 5700-7400 for general practitioner consultation, INR 3550-10300 for emergency visits (Fig.2), INR 4500-9000 for investigations and INR 7000-13700 for medications. The indirect costs ranged between INR 9000-19800 on daily wages lost, INR 2900-8700 on travel expenses (significant p value <0.014) between mild and moderate persistent asthma. Mean costs on food ranged between INR 1700-3200, tuitions INR 3000-5700 and miscellaneous expenditure being INR 2000-8300. The economic impact progressively increased depending on the asthma classification. The percentage of annual income spent was 28.76%, 40.99% and 60.64% in intermittent, mild and moderate persistent asthma respectively.

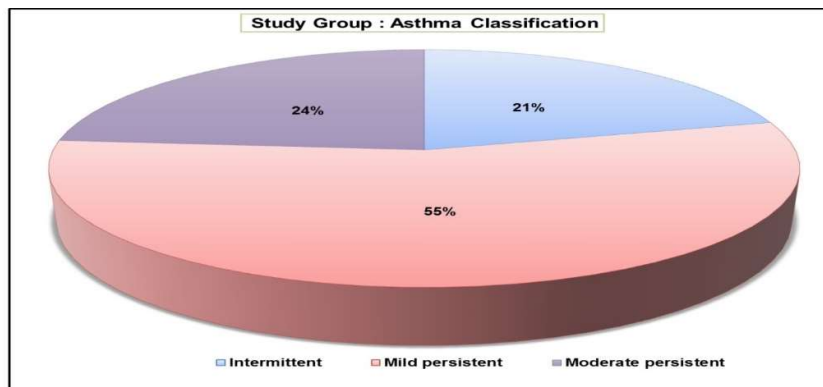


Figure- 1: Asthma classification according to GINA guidelines

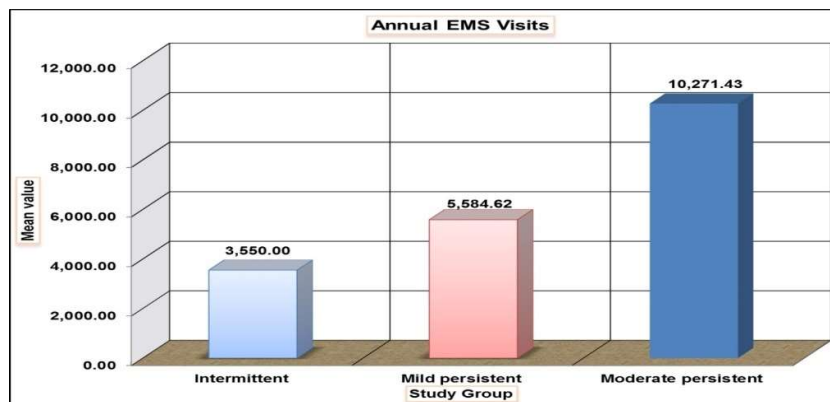


Figure-2: Expenditure on annual emergency visits

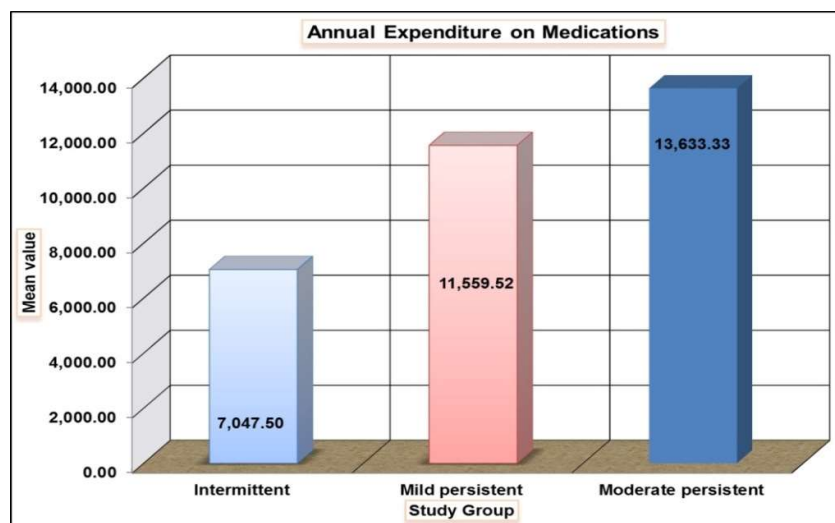


Figure-3: Graph showing the annual expenditure on medications

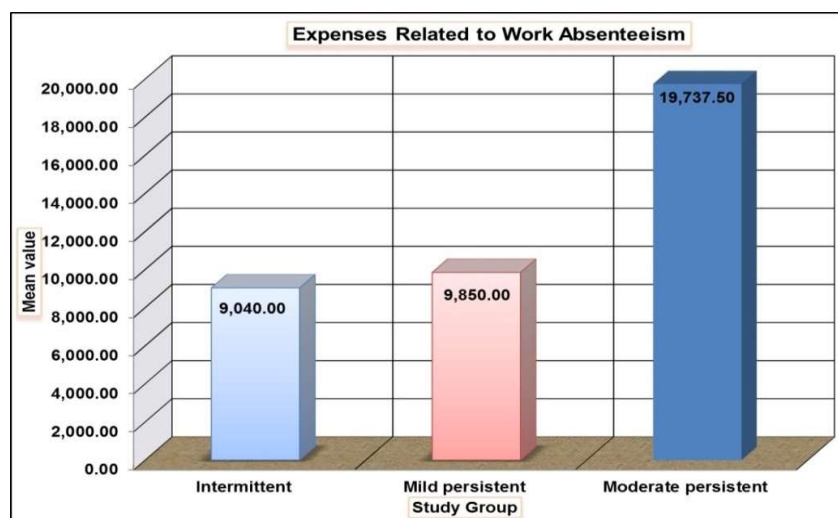


Figure-4: Expenses Incurred due to daily wages loss

Discussion

The economic burden of paediatric asthma has been sparsely studied in India. The direct costs mainly involved expenditure on medications (INR 7000-13700) (Fig. 3) which is similar to a study conducted wherein the drug costs form the majority of direct expenses [12]. Emergency Visits accounted for the second highest aspect of direct costs, which was higher compared to studies done in Iran and other countries [13,14].

These expenses could be curtailed by proper classification, early intervention, appropriate inhalation therapies and instructions to the parents/ caretakers in the event of an exacerbation at home and during commuting [15]. The indirect costs accounted for a large portion of the expenditure as compared to direct costs, the main component being loss incurred in daily

wages (INR 9000-19800) (Fig.4). Majority of the population belonged to the middle class, where income is dependent on daily earnings. In contrast, few high quality studies have shown a substantial portion of their expenditure incurred on direct costs [16,17]. A significant observation on indirect costs of patient shaving to travel distances (p value <0.014) emphasises the need for primary asthma health care centres in order to facilitate and enhance prompt management of exacerbations. Our study revealed that direct and indirect costs were directly proportional to the grade of asthma [18,19].

The importance of having a health insurance coverage should be emphasized, as none of our patients were enrolled under any health scheme.

Conclusion

Institution of guidelines by the health care providers in the peripheral districts and cities would ensure reduction of the disease burden and better quality of life. It is pertinent to maintain an annual database in India, for effective strategies to be adopted in reducing the burden of paediatric asthma [20]. Paediatric asthma has a very good prognosis and effective counselling and preventative therapies would certainly reduce the overall burden in the country.

The Authors have no, real or perceived conflicts of interest that relate to this article.

The Authors have no source of financial support

Author Contributions

Conceptualization: Dr. Fehmida Najmuddin, Dr. Keya Lahiri

Data Curation: Dr. Fehmida Najmuddin

Formal Analysis: Dr. Fehmida Najmuddin

Methodology: Dr. Keya Lahiri

Supervision: Dr. Keya Lahiri

Validation: Dr. Keya Lahiri, Dr Fehmida Najmuddin

Writing, Review & Editing: Dr. Keya Lahiri, Dr. Fehmida Najmuddin.

Funding: Nil, **Conflict of interest:** None initiated,

Perission from IRB: Yes

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How to cite this article?

Lahiri K, Najmuddin F. Correlation of financial burden with severity of asthma in children. *Int J Pediatr Res.* 2018;5(5):273-277.doi:10.17511/ijpr.2018.i05.06.

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