



Impact of Asthma on Pediatric Patients' Quality of Life and Comorbid Condition Pattern

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How to citation this article: Dr Unmesh Dev M, Dr Aishwarya S. Shikhare, Dr Santosh Kondekar, Dr Surbhi Rathi, “Impact of Asthma on Pediatric Patients' Quality of Life and Comorbid Condition Pattern”, IJMACR- September - 2024, Volume – 7, Issue - 5, P. No. 17 – 21.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Aim and Introduction: Asthma is a prevalent chronic condition that often affects children and teenagers, which impair several aspects of an individual's quality of life. This research, relied on the Patient-Administered Quality of Life Questionnaire (PAQLQ), sheds light on young people's complex difficulties while living with asthma. The coexistence of asthma with other comorbidities has been shown to impede its management, elevate the risk of mortality, intensify acute exacerbations, incur higher healthcare expenses, diminish job productivity, and adversely affect pediatric patients' and carers' quality of life. Childhood asthma is

frequently associated with various comorbid conditions. The occurrence of comorbidities exhibits variability concerning both age and geographical regions. This paper assessed the quality of life (QoL) and analyzed possible risk factors associated with worse QoL in children and adolescents with asthma.

Methods: This research included cross-sectional and observational methodologies. The assessment of the quality of life was conducted utilizing the PAQLQ, while the evaluation of asthma control was ascertained through the implementation of the Asthma Control Test. The variables were analyzed using statistical tools; Chi-square test and the unpaired t-test.

Results: QOL was notably lower in patients with co-morbidities compared to those without across all severity levels. Correlations revealed that QOL scores negatively correlated with age, asthma severity, and co-morbidities in patients with co-morbidities. Among individuals without any additional medical conditions, only the severity of asthma negatively correlated with scores on the PAQLQ.

Conclusion: This illustrates that individuals with concurrent co-morbidities exhibit notably worse quality of life than those lacking co-morbidities, regardless of the severity of their asthma condition. As asthma severity escalates, QOL diminishes, with lower mean scores observed in moderate and severe persistent asthma cases.

Clinical Significance: These insights guide healthcare providers interventions to optimize the well-being of young patients grappling with the complex interplay of asthma and co-morbidities.

Keywords: Asthma, Comorbid, Co-Morbidities, PAQLQ, Anthropometric Measurements

Introduction

With a prevalence rate of 7.9 % among children¹, asthma represents a substantial illness burden. It contributes to 20.8 % of DALY as per 2019 global health matrix². Beyond the worldwide cost of the illness, frequent and recurrent asthma episodes significantly impact kid's quality of life by limiting their capacity to participate in regular activities.

The incidence of asthma in children aged 13-14 in the Middle East was around 7.6%. Iran exhibited the lowest rate at 0.7%, while Iraq, notably in Baghdad, had the highest rate at 22.3%. In the West Bank region of Palestine, an intermediate level of prevalence was identified (3.8%), whereas the occurrence of recent bouts

of winded was found to be greater (8.9%). Comparable results were derived from Jordan, whereby the occurrence rates for asthma and wheezing were determined to be 4.1% and 8.3%, respectively³.

Inadequately managed asthma in developing children exerts harmful consequences on their affective, cognitive, and physiological maturation. From a vantage point centered on quality of life (QoL), it becomes imperative to steer the course of managerial deliberations toward attaining asthma control rather than fixating solely on the severity of the condition⁴. A comprehensive portrayal of health-related QoL entails many facets, ranging from overall welfare and physical capabilities or manifestations to psychological elements like cognitive abilities, emotional well-being, and social welfare and functioning. The assessment of QoL serves as a valuable means of evaluating the impact of disease, shedding light on the consequences of various risk factors and playing a pivotal role in public health by informing policy decisions⁵. It aids in formulating strategic plans, facilitates the allocation of resources, and enables the evaluation of the effectiveness of medical advancements and public health interventions. When evaluating the QoL in children with asthma, a frequently employed tool is the PAQoLQ⁶. This questionnaire offers valuable insights into the subjective viewpoint of the patient, shedding light on their encounters with persistent illness. Furthermore, it facilitates comparisons between various medical procedures, medications, and interventions, emphasizing enhancing QoL as the primary goal of asthma management.

Methodology

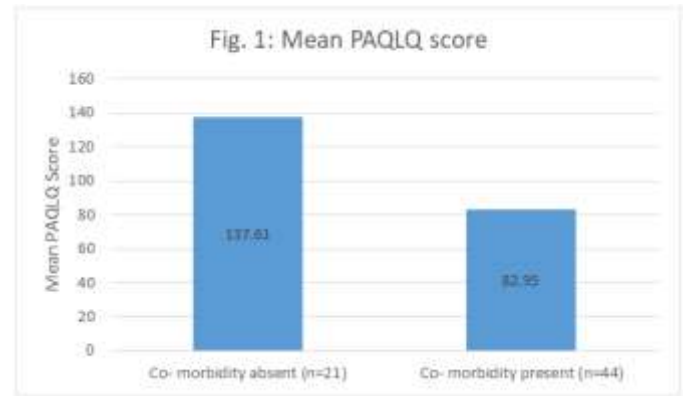
The present research used an observational and cross-sectional design to investigate the comorbid diseases linked with asthma in a sample of children diagnosed

with asthma. Furthermore, the study examined children's population, anthropometric, and clinical characteristics, regardless of their co-morbidities.

Institutional ethical committee approval was obtained with reference number ECARP/2014/123, prior to the study. The children who met the specified inclusion and exclusion requirements were summoned to participate in the pulmonary clinical assessment. Participants who voluntarily gave permission were recruited for the research and assigned a unique case record number. The pertinent data from the asthma clinic's follow-up sheet were accurately recorded in the corresponding case record form. The preceding reports underwent a thorough assessment and were documented in the case record form. A group of children aged 7 to 12 years had interviews to evaluate their health-related quality of life. This assessment was conducted using the pediatric asthma QOL questionnaire. According to the PAQLQ, 23 items were administered to children, with each participant's responses recorded using a pre-established questionnaire format. The case file form and questionnaire data were inputted in the MS-Excel format.

Results

The study investigated the QOL of pediatric asthma patients aged ≥ 7 years, using the PAQLQ tool to compare those with and without associated co-morbidities. PAQLQ assessed physical, emotional, and social challenges experienced by asthmatic children. QOL was notably lower in patients with co-morbidities (mean \pm SD score 82.95 ± 39.70) compared to those without (mean \pm SD score 137.61 ± 9.56) across all severity levels. Fig 1 demonstrates mean PAQLQ score of subjects with and without comorbidity.



The average PAQLQ score among patients with co-morbidity was 82.95 ± 39.70 , with an average score of 69 (range: 37-156). In contrast, the average PAQLQ score among patients without co-morbidities was 137.61 ± 9.56 , with a median of 137 (range: 118-153). The Mann-Whitney examination was utilized to produce a p-value of 0.0001, suggesting a significant difference in PAQLQ scores between kids with co-morbidities and those without.

When considering asthma severity subgroups, QOL deteriorated in patients with co-morbidities as asthma severity increased. Mean scores were lower in moderate persistent (mean \pm SD score 77.31 ± 26.52) and severe persistent (mean \pm SD score 43.57 ± 3.82) asthma than in mild intermittent (mean \pm SD score 136.78 ± 16.01) and mild persistent asthma (mean \pm SD score 114.4 ± 20.86). Severe persistent asthma's mean PAQLQ score was also significantly lower than moderate persistent asthma.

Correlations revealed that QOL scores negatively correlated with age, asthma severity, and co-morbidities in patients with co-morbidities. Conversely, patients without co-morbidities only showed a negative correlation with asthma severity.

Correlation of PAQLQ

Table 1: Correlation of PAQLQ

	Without co-morbidities	With co-morbidities
Age	Spearman's r = 0.2137 p- value = 0.3522 There is no correlation between age and PAQLQ score	Spearman's r = 0.6889 p- value = < 0.0001 There is a significant moderate negative correlation between age and PAQLQ score.
Asthma Category	Spearman's r = 0.5357 p- value = 0.0123 There is a significant moderate negative correlation between severity of asthma and PAQLQ score.	Spearman's r = 0.9056 p- value = < 0.0001 There is a significant strong negative correlation between severity of asthma and PAQLQ score.
Number of co-morbidities		Spearman's r = 0.3652 p- value = 0.0148 There is a significant moderate negative correlation between number of co-morbidities and PAQLQ score.

Table 1: Shows the correlation of PAQLQ scores with variables. Upon examining the relationship between PAQLQ scores and variables such as age, asthma extent, and the number of co-morbidities, it was shown that there existed a notable inverse correlation between the scores and all the parameters in children with co-morbidities associated with asthma. Nevertheless, among individuals without any additional medical conditions, only the severity of asthma negatively correlated with scores on the PAQLQ.

Discussion

The research findings highlight the significant impact of co-morbidities on the QoL of juvenile asthma patients at least seven years old. The study used the PAQLQ instrument to illustrate that individuals with concurrent co-morbidities exhibit notably worse quality of life than those lacking co-morbidities, regardless of the severity of their asthma condition. As asthma severity escalates, QOL diminishes, with lower mean scores observed in

moderate and severe persistent asthma cases⁷. This correlation accentuates the intricate interplay between the severity of asthma and co-morbidities in influencing the overall health experience of pediatric patients.

Previous research by Juniper et al. (1996) reported a significant negative correlation between a child's asthma status and PAQLQ scores, while Mussaffi et al. (2007) found no correlation with age or asthma severity. Juniper et al. (1996) have also observed a noteworthy association between a child's asthma state and their ratings on the PAQLQ⁸. Mussaffi et al. (2007), however observed no significant link between the PAQLQ scores and the patients' ages or the severity of their asthma⁹.

The relationships found in this study shed light on the complex web of factors that contribute to quality of life. Asthma severity, age, and the presence of co-morbidities are all negatively correlated with quality of life. On the other hand, patients who have asthma show a negative connection with asthma severity. These results expand

the knowledge of the causes of QOL differences among children with asthma. The article builds upon prior investigations, emphasizing the significance of QOL assessments in pediatric asthma management. Identifying co-morbidity-driven QOL challenges underscores the need for comprehensive treatment strategies addressing asthma and concurrent medical conditions. These insights have far-reaching implications for healthcare providers, guiding interventions to optimize the well-being of young patients grappling with the complex interplay of asthma and co-morbidities.

Ethical considerations

Informed consent and institutional ethical committee clearance was taken. Confidentiality and privacy of the patient is maintained throughout the study.

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