

## Research Article

### Quality of Life in Asthmatic Children in Asia

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#### Abstract

**Objectives:** To assess the quality of life (QoL) among Asian children with asthma.

**Methodology:** This was a systematic review based on PRISMA guidelines, searching four engines; PubMed, Embase, Scopus, and Medline. Those studies were selected that evaluated the QoL using the Pediatric Asthma Quality of Life Questionnaire (PAQLQ) using both the overall score and scores on the individual physical, emotional, and symptoms domains.

**Results:** We screened 80 articles and out of those only 3 were selected for the systematic review, collectively including 282 participants. A review was carried out and showed that the overall QoL score was 5.43 with a standard deviation of 1.2.

**Conclusion:** The total QoL score proved that asthmatic children in Asia have a low quality of life.

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#### INTRODUCTION:

Asthma is a lung inflammatory illness characterized by episodic acute asthma attacks, reversible airflow restriction, and bronchial hyperreactivity. Extrinsic asthma, also known as allergic asthma, typically begins in childhood and is

brought on by allergens including pollen, dust mites, and specific foods. Intermittent coughing, dyspnea, and wheezing with a high pitch are the primary symptoms. Childhood is a time in one's life when many of the behavioral patterns that will be used

later in life are formed. As a result, it's important to evaluate how a chronic illness like asthma affects a child's quality of life and social activities. In Asia, asthma is usually prevalent because of the increased number of allergens such as smog which impede the daily activities of children.

Asthma is the most common chronic respiratory disease worldwide, with an estimated 400,000 deaths, or more than 1000 deaths every day, according to the Global Burden of Disease collaboration in 2015(1). It is estimated that 7.1% of children under the age of 18 have asthma(2). Almost half of all children with asthma miss at least one day of school each year as a result of their asthma, and one in five children with asthma receive emergency department (ED) care. Quality of life (QOL) is commonly used in pediatric asthma as an outcome measure to describe how an asthmatic child's everyday life is impacted. Children with asthma experience emotional problems in 25–40% of cases; the most prevalent symptoms include excessive psychological dependence on parents and elevated anxiety(3). The past few decades have seen an increase in childhood asthma cases in China. A survey done in 2000 found that the prevalence of asthma has increased to 0.52 percent – 3.34 percent, with a national frequency of 1.54%(4). According to a subsequent survey conducted in 2010, the prevalence was estimated to range from 0.42% to 5.37%, with a countrywide frequency of 2.32%(5). In Qatar, a study including 3,283 schoolchildren (average age: 9.03 1.99 years; gender breakdown: 52.3% boys, 47.7% girls) was carried out between

February 2003 and February 2004. It revealed that 19.8% of school-aged children in Qatar have asthma(6). The rate of pediatric asthma in Oman is 20.7%(7). From January 2014 to December 2014, a study was conducted in Dhaka. The age was 12.5 2.9 years on average. The quality of life (QOL) of children with asthma declines with age as the severity of the condition increases. Children with asthma who were female had worse QOL scores overall ( $p=0.017$ ) and also in the activity domain ( $p0.001$ ). Children with a single parent and low monthly family income had worse emotional domain scores and QOL ( $p=0.021$  and  $p0.001$ , respectively) (8).

This study aims to quantify the extent to which asthma affects children's quality of life in Asia. This research will increase the body of knowledge that will be utilized to formulate future treatment plans, conduct additional research, and decide on regional policy. Knowing the incidence of asthma in children in Asia is critical for appropriate resource and service allocation

## **METHOD:**

This was a systematic review based on the PRISMA guidelines. The study was conducted to assess physical health, mental status, and symptom scores in asthmatic children. The strategy was to search four tools; PubMed, Embase, Scopus, and Medline. We included studies that evaluated the QoL among asthmatic children in Asia via PAQLQ(9) using the total scores as well as individual scores on the individual domains. The articles were included on the basis that they should use PAQLQ(9) as an

assessing tool, the studies have included children between the ages of 7-17 years, they must be original articles and they must be in English language or thereby have a translation. The articles were screened and the information from included studies was extracted in the form of a table and was reviewed. Due to the heterogeneity of the studies, no analyses were carried out.

**RESULTS**

Of the 80 studies that were screened, only 3 were included in this systematic review. As we talk about the study design, there was a cross-sectional, prospective, and cohort study. We had a total of 282 participants, as shown by Table 1's General characteristics of the studies that were selected in the systematic review. All the participants were between 7-17 years of age.

Table 2 displays the weighted analyses of the selected studies, which demonstrate the PAQLQ scores' assessment of the QoL of all 282 participants. The mean age of all the participants is 11.74 with a standard deviation of 2.73. The overall QoL score by PAQLQ of these included studies was found out to be 5.43 with a standard deviation of 1.2. Although the individual scores of the studies are different from the overall score. The QoL score of Hassan et al(8) is 5.5 which is higher than the other studies which indicate that the asthmatic children in Bangladesh ave higher QoL than the children of India and Thailand. This is not an anomaly as different factors such as environmental pollution and the child-to-area ratio play an important part in this score. This has not changed the fact that asthmatic children in Asia

have low QoL scores which is evident by the mean QoL score based on PAQLQ and QoL of Asian children continue to deteriorate as they grow older due to the severity of the disease(8). Table 3 shows the quality of the selected studies. Figure 1 shows a description of the Venn diagram which illustrates the similarities and differences between the studies included in our study. As the figure shows, overlapping features in our included studies were the age of the participants, usage of Peak Expiratory Flow Rate (PEFR), and a decrease in physical activity and symptomatic domains.

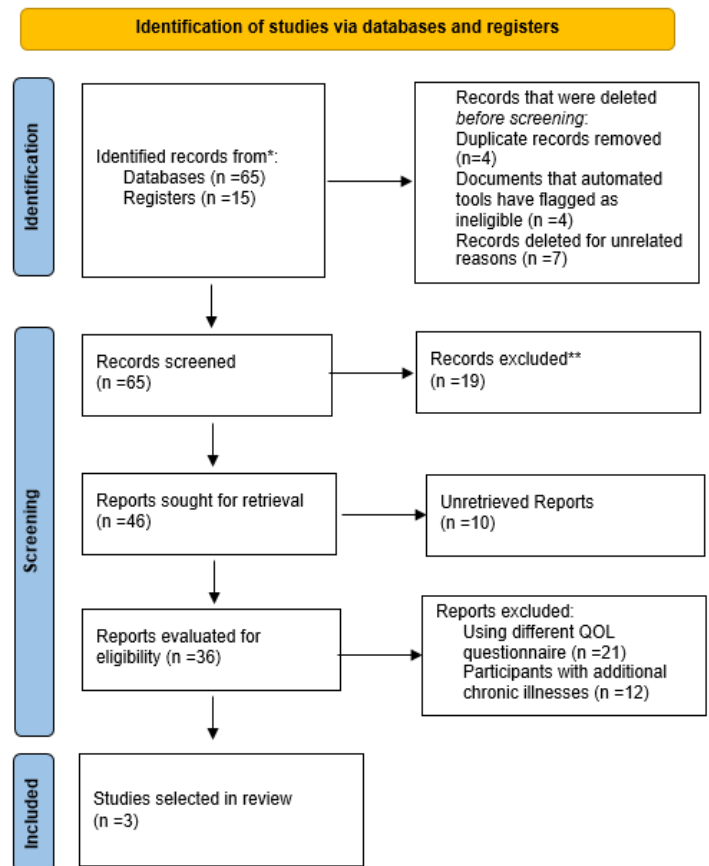


Table 1: General Characteristics of selected studies

	Author	Study Design	Year of Study	Country	Number of participants	Age of participants (years)	Primary Outcome
1	Hassan et al	Cross-sectional	2017	Bangladesh	162	7-17	Female patients had an overall low score of QOL than males.
2	Nair et al	Prospective	2014	India	69	7-17	A significant improvement in scores of activity domain and symptom after intervention but the change in the emotional domain.
3	Poachanukoon et al	Cohort	2006	Thailand	51	7-17	The stable group had higher PAQLQ scores than the unstable group.

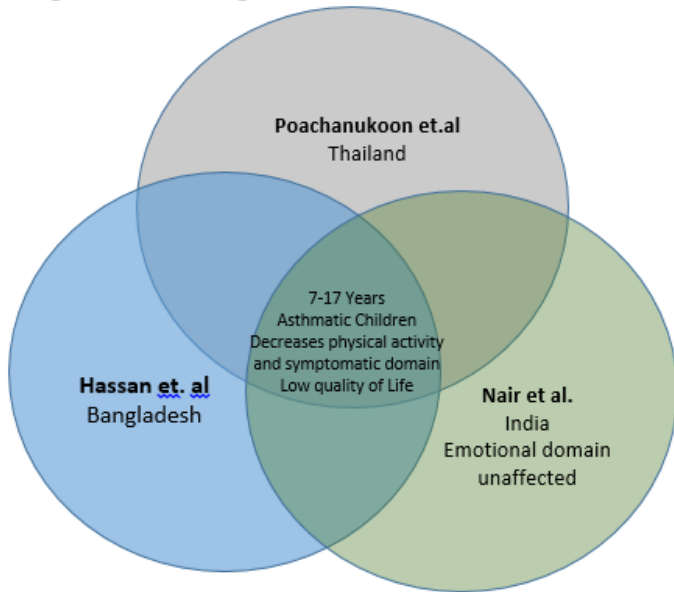
Table 2: Weighted analyses of the selected studies

Characteristics	Hassan et al	Nair et al	Poachanukoon et al
Total Sample	162	69	51
Male	80	54	38
Female	82	15	13
Mean age	12.5 (SD=2.9)	11.31 (SD=2.65)	11.4 (SD=2.7)
Overall QOL score	5.5 (SD=0.5)	Pre intervention {4.66 (SD=1.28)} Post intervention {5.91(SD=0.59)}	Stable group {6.2(SD=1.9)} Unstable group {5.4(SD=1.3)}
<b>Mean QOL of three studies</b>	<b>5.43 (SD=1.2)</b>		

Table 3: A quality appraisal of the selected studies

Questions for appraisal	Hassan et al (Cross-sectional)	Nair et al (Cross-sectional)	Poachanukoon et al (Cohort)
For Cross-sectional Studies			
Were the criteria for inclusion in the sample clearly defined?	YES	YES	
Were the study subjects and the setting described in detail?	YES	YES	
Were objective, standard criteria used for the measurement of the condition?	YES	YES	
Were the outcomes measured validly and reliably?	YES	YES	
Was appropriate statistical analysis used?	NO (not needed)	YES	

Figure 1: Venn Diagram



## DISCUSSION:-

Asthma is a chronic disease that has a great impact on children's health as well as their physical and emotional capabilities. It results in a high number of absentees from school, less participation in extracurricular activities, and mental stress not only on children but also on the parents or guardians. For the last twenty years, health-related QoL in asthmatic children has been assessed by the usage of PAQLQ around the world which has helped in managing the treatment and control of asthma. (10)

In the present, we conducted a systematic review of the studies which used the PAQLQ to assess the overall as well as the individual scores in the physical activity, emotional and symptom domains. By reviewing the studies, it was found that the overall QoL as well as the individual domains of asthmatic children in Asia is low. All three included studies(8,11,12) used the PAQLQ for assessing the QoL in the included participants. However, all three

studies had different ways of approaching the results. Hassan et al(8) depicted that score of the activity domain was quite low as compared to the symptom and emotional domains.

Nair et al(12) had similar results in the individual domains, but the study also pointed out that after intervention scores of activity and symptom domains increased while the emotional domain had no effect. This result pointed out that parents or guardians take a lot of emotional stress if their child is affected by such a chronic disease as compared to the child itself. (11)

Roncada et al(13) conducted a meta-analysis on assessing the QoL in asthmatic children and their guardians which included studies from around the world. The meta-analysis had a greater overall QoL score than the present systematic review. The difference in the overall score is because participants in those studies were from continents other than Asia which have a higher quality index air. Moreover, those regions have advanced treatment measures that lead to a higher quality of life than the children in Asia. Our systematic review indicates that children in Asia suffering from asthma have a lower quality of life than children around the world.

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