**Objectives**

Genetic variations has the potential to alter therapeutic efficacy. The aim of the study is to analyze polymorphisms associated with variation in response to corticosteroid treatment in pediatric asthma patients.

**Background**

Asthma is one of the most common chronic respiratory diseases in childhood, with about 300 million asthmatic patients worldwide and a sharp increase in their prevalence. Despite corticosteroids being highly effective for the chronic treatment of asthma, there are variations in therapeutic responsiveness. These variations can be attributed to a degree of heterogeneity, which is associated in part to genetic variation. This provide the rationale for pharmacogenetic studies of corticosteroids.

**Methods & Materials**

Relevant literature was identified through CENTRAL, CINAHL, MEDLINE and Scopus. Studies in which pharmacogenetic methods, such as genome-wide association studies, candidate gene studies and genome sequencing, were used to identify and repeatedly validate the effect of one or more single nucleotide polymorphisms on the efficacy of inhaled corticosteroids.

**Results**

The search returned 341 studies, with 23 full text articles assessed for eligibility. We excluded 14 full text articles with the remaining 9 studies included (incorporating analysis of 210 SNPs and including in over 7000 children). Variants that enhanced response to corticosteroids include CRHR1 (rs1876828), T gene (rs3127412 and rs6456042), TBX21 gene (rs2240017) in TXB21 gene, ORMDL3 (rs2872507). Genes containing polymorphisms predictive of reduced response to corticosteroids were FCER2 (rs28364072) and ST13 (rs138335 and sr138337), and GLCCI1 (rs37972). Successful replication of CRHR1 and FCER2 in additional publications has been achieved, but GLCCI1 was not successfully replicated. Various outcome measures were used across the studies.

**Conclusions**

Numerous SNPs that alter the effectiveness of corticosteroid treatment in asthma have been identified, but external replication has been limited to date, and application into clinical practice is not routine.