

# Modelling therapeutic response in asthmatic adults: a previous exploratory analysis

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**Introduction:** Asthma is a respiratory disease characterized by chronic inflammation of the airways. Effective asthma management is essentially based on choosing the appropriate treatment for each individual (1). Data science and machine learning models offer valuable insights and enhance the outcomes achieved in asthma management (2). **Objectives:** The main objective is to develop predictive models for therapy response in patients with asthma, and secondarily to identify clinical, functional and biological characteristics that influence this response. **Methods:** Data from fifty adults with asthma were analyzed, collecting information on anthropometric, clinical, functional, biological, therapeutic, occupational, and allergen exposure factors. The study followed the “Knowledge Discovery in Databases, KDD” methodology. **Results:** The sample consisted of 50 asthmatic adult participants, aged between 21 and 81 years old mean age=54.02 (s=14.5), from which 20 (40%) were male and 30 (60%) were female. The analysis of the characteristic symptoms of asthma (dyspnea, cough, wheezing and chest tightness), reveals a statistically significant improvement ( $p<0.001$ ) of all these symptoms after the treatment. The asthma control test, the life quality questionnaire and the asthma and allergic rhinitis control test evaluated before and after treatments, demonstrate a statistically significant difference ( $p=0.023$ ,  $p <0.001$  and  $p<0.001$ , respectively). On respiratory function, only FVC reveals a significant difference ( $p=0.409$ ), after treatment. However, the average did not reach the minimal important difference (MID) of 200ml. The average number of exacerbations and SU recurrences difference was also significant in both cases ( $p<0.01$ ), reaching MID (>50%). **Conclusions:** The majority of the individuals in this group had a positive, clinically important response to treatment. This result may be because they have severe atopic asthma, and Th2-High endotype, and for that reason they are undergoing more differentiated treatments, such as biological treatments.

**Keywords:** Asthma, Therapeutics, Machine Learning, Prediction

## References:

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