

R1  R2  R3  PG0  PG1  Estagiário  Tecnólogo   
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Service (sector) Cornea and External DiseaseN° CEP

### **Using a neural network to study a screening questionnaire for ocular allergy in children**

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**Purpose:** To evaluate sensibility and specificity of a screening questionnaire for ocular allergy using an artificial neural network and to elaborate a primary artificial neural network to be useful for other future screenings. **Methods:** Observational transversal study including 2 groups: [1] 48 from our Corneal and External diseases sector (subject); [2] 54 healthy children from “Escola Paulistinha de Educação without signs of ocular allergy (control). Questionnaire was applied to their mothers or tutors and was composed by eight questions about allergic ocular disease based on data from our sector and seven items about systemic allergy from the validated questionnaire of the International Study of Asthma and Allergy Steering Committee (ISAAC). An artificial neural network was created to identify the most important and to exclude possible redundant items. The study objective was to predict ocular allergy diagnosis as less as possible amount of questions. The model of network used was the multilayer perceptron with the algorithm backpropagation. **Results:** It was possible to develop an artificial neural network using only seven of usual fifteen questions (Q5, Q7, Q9, Q10, Q11, Q14 and Q15). The remaining questions did not add any information to the model. The most important question in this particular neural network was number five, in a manner that if this item was missed, the error achieved 0,634. **Conclusions:** The artificial neural network was very useful on eliminating unnecessary and redundant items of our questionnaire. Just one question may be enough to sort the patients more prone to present ocular allergy in a population survey.