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Population, health and educational factors affecting antibiotic  
use: an observational study in PortugalA. Teixeira Rodrigues<sup>1, 2</sup>, F. Roque<sup>1, 3, 4</sup>, S. Soares<sup>1</sup>, A. Figueiras<sup>5, 6</sup>, M.T. Herdeiro<sup>1, 7, 8</sup>

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Considering that, in Portugal, antibiotic use varies a lot between regions, revealing that this is a very complex problem affected by several factors, our aim was to assess how social, health, geographic and educational factors affect antibiotic use.

## Methods

Outpatient antibiotic consumption data (ATC: J01) of the Centre Region Health of Portugal, provided by IMS Health Portugal, was analyzed as DID – Defined Daily Doses per 1000 inhabitants per day. We analyzed the influence of education and learning indicators, of health indicators and population indicators, published in Statistics Portugal website – Instituto Nacional de Estatística, [www.ine.pt](http://www.ine.pt), in the antibiotic consumption rates.

## Results

Social, health, geographic and educational indicators reveals the heterogeneity of Portugal in this context. The healthcare system varies a lot from region to region in several statistical indicators, namely in terms of the number of health professionals per inhabitant or academic qualifications of the population. The statistical analysis revealed that several factors could influence antibiotic consumption rates in Portugal, which could help to explain the differences found between municipalities and regions. Results revealed statistical significant relations between antibiotic consumption and education indicators, as illiteracy rate, health indicators, as performance and infra-structures health service characteristics, and population indicators, as mean age.

## Conclusions

Antibiotic use is a very complex process that demands the evaluation of many factors which can be affecting it. Our results revealed that to improve antibiotic use, aiming to tackle the increasing rates of antimicrobial resistances, healthcare providers and health authorities must consider the influence of social, geographic, economic, health and clinical factors.

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