Antibiotics acceptability: Contrasting Effects of Aromas on Girls and Boys

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Introduction
Acceptability remains a crucial endpoint to improve compliance in children. The impact of Active Pharmaceutical Ingredients (API) on acceptability of antibiotics have been highlighted previously [1-2]. Herein we investigated the acceptability of the three most frequently prescribed API in France, focusing on the impact of gender and aromas. To explore the drivers of antibiotics acceptability, we used CAST - ClinSearch Acceptability Score Test® [11-12], a multivariate approach mining a large set of real word data to provide an intelligible score integrating the many aspects of this multi-faceted concept.

Methods

Data collection
Observational study on antibiotics use in children (0-12 years) receiving Amoxicillin, Co-amoxiclav or Cefpodoxime formulated as solid for oral liquid preparations. The healthcare professional in hospitals, or the relative in ambulatory care, observing the medicine use (14 following study inclusion) reported in a web-questionnaire observations to describe acceptability (intake, reaction, manipulation-administration time, and the use of food/drink, divided dose, reward, or restraint), as well as information on the medicine, the user, and the context of use, to explain acceptability.

Dataset
We collected 159 evaluations: 43% Amoxicillin, 29% Co-amoxiclav and 28% Cefpodoxime. 75% of Amoxicillin evaluations and 25% of cefpodoxime cases had a lemon aroma; 0% and 75% had a banana aroma respectively. 47% of the evaluations were of girls and the average age was 3 years SD (2.5). The age range and the gender distribution did not different for any of the API.

Data analysis
Based on 1016 evaluations of various medicines, including the 159 of interest, a multivariate approach (Mapping & Clustering) provided an acceptability reference framework: a 3D map juxtaposing green and red zones that materialized the positively and negatively accepted profiles. Factors of interest (e.g. antibiotics, aromas in girls) were positioned on the maps at the barycenter of the related evaluations. A barycenter belonging to the green zone, along with all of the 90% confidence ellipses surrounding it, was considered as positively accepted.

Acceptability of Antibiotics
Cefpodoxime was less accepted than others API, irrespective of gender or age.

Acceptability of Cefpodoxime
Cefpodoxime flavored with banana appeared to be suboptimal regardless of patient gender.

Aromas Drive Gender Acceptability
Regardless of API, lemon flavoring appeared adequate for boys, but there was a contrasting effect on girls.

...and Also in the Elderly
Overall, antibiotics appeared to be less well accepted by girls, regardless of aromas.

CAST analyses of elderly populations [1] have found similar gender acceptability differences regarding palatability.

References

Conclusion
These results on the acceptability of the antibiotics most often prescribed in France highlight the contrasting effect of certain aromas on girls and boys. These gender based effects of aromas are corroborated across a wide variety of medicines. Similarly, the gender acceptability differences regarding palatability of oral liquid preparations remain an issue in the older population. Aromas must therefore be carefully selected to ensure adequate acceptability in the targeted population.