

WHICH SYRUP FLAVOR PEDIATRIC POPULATION PREFERS THE MOST?

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ABSTRACT

Objectives: To find out syrup flavor preferences among pediatric patients.**Methods:** This prospective survey included 350 pediatric patients in a multispecialty hospital and was conducted for over four months. The patients filled a pro forma with a questionnaire regarding the syrup flavor preferences details among four drug categories. If the patients were unable to fill the questionnaire, the parents were asked to fill the same.**Results:** In our survey, the first preference of the syrup flavors by male gender from all four drug categories were banana-vanilla, orange, lime, and orange-lemon flavors. Whereas, the same in the female gender were the following: Strawberry, grape, banana-pineapple, and strawberry-lemon flavors.**Conclusion:** The creation of an acceptable syrup taste using flavors should be taken into account by the healthcare professionals before prescribing it to the children.**Keywords:** Syrup, Flavors, Drugs, Pediatric patients, Medication adherence.© 2021 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2021v14i4.40599>. Journal homepage: <https://innovareacademics.in/journals/index.php/ajpcr>

INTRODUCTION

Pediatric patients often do not take drugs prescribed, which directly affects patient therapeutic outcomes [1]. Taste is an essential factor in medication adherence, particularly in pediatric patients [2]. Thus, pediatric suspensions' development and marketing must target not only efficiency but also palatability [3]. The unpleasant taste of medication is a crucial barrier to compliance for most pediatric patients with acute or chronic illness [4]. Many parents are familiar with the difficulties of convincing children to take bitter, unfamiliar medicine. Hence, palatability is an important factor influencing medication adherence and acceptability in pediatric population [5].

METHODS

This prospective survey was conducted in the inpatient pediatric department of a tertiary care hospital from February 2019 to May 2019 to determine syrup's flavor preferences among pediatric populations. A questionnaire containing different drug classes and the preferred flavors used for their formulation for masking the bitter taste of drug was prepared. A total of four drug classes were included in the questionnaire: Antibiotics, antihistamines, barbiturates, decongestants, and expectorants. Each category contains three questions:

1. Which flavor you prefer the most?
2. Which flavor is your second preference?
3. Which flavor you like the least?

Patients admitted to the pediatric ward during the study period were identified daily using the wards census registers. The survey questionnaire was given to the patients aged up to 18 years. If the patients were unable to fill the questionnaire, the parents were asked to fill the same. There were a total of 350 patients included in this survey. There was male preponderance among the enrolled patients, with being 190 (54%) male and 160 (46%) patients being female. The drug classes and preferred flavors during their formulations were categorized based on Sharma *et al.* study. The selected flavors during formulations for category A drugs (Antibiotics) are Cherry,

maple, pineapple, orange, raspberry, banana-vanilla, butterscotch, coconut-custard, fruit-cinnamon, strawberry, and vanilla. For category B drugs (Antihistamines), the following are the preferred flavors: Apricot, cherry, cinnamon, grape, honey, lime, peach-orange, peach-rum, raspberry, and wild cherry. Category C (Barbiturates) drugs, banana-pineapple, banana-vanilla, cinnamon-peppermint, orange, peach-orange, and grenadine-strawberry are the preferred flavors. Anise, apricot, butterscotch, cherry, coconut-custard, custard-mint-strawberry, grenadine-peach, strawberry-lemon, gooseberry, orange-lemon, coriander, pineapple, and raspberry are the chosen flavors in category D (Decongestants and Expectorants) drugs [6-8].

RESULTS

In our survey, the first and second preference of the syrup flavours by male gender from all four drug categories were banana-vanilla, orange, lime, honey, cinnamon-peppermint, orange-lemon, and custard-mint-strawberry flavors. The least syrup flavour by male gender from all four types was coconut-mustard, apricot, grenadine-strawberry and anise flavors. Whereas in the female gender, the first and second preference of syrup flavors from all drug four categories were strawberry, vanilla, grape, lime, banana-pineapple, grenadine-strawberry, strawberry-lemon and butterscotch flavors. The least choice of syrup flavor by female gender from all drug four categories were Maple, peach-rum, cinnamon-peppermint and custard-mint-strawberry flavors (Table 1).

DISCUSSION

Children's sensory system is well-developed to detect tastes, smells, and chemical irritants and recognize sweetness and saltiness from an early stage. Furthermore, children can realize sweet taste in oral liquids and the degree of sweetness. Children have a low tolerance for disagreeable taste; hence the pediatric formulations are available in various flavors that successfully mask unpleasant tastes without affecting physical and chemical stability [9]. The formulators have found that an unpleasant taste-masking problem can best be resolved using blends of distinctive

Table 1: Syrup flavor preferences among the pediatric population

	Female	Male
Category - A		
First preference flavor	Strawberry	Banana-Vanilla
Second preference flavor	Vanilla	Orange
Least preference Flavor	Maple	Coconut-Mustard
Category - B		
First preference flavour	Grape	Lime
Second preference flavor	Lime	Honey
Least preference Flavor	Peach-Rum	Apricot
Category - C		
First preference flavor	Banana-Pineapple	Orange
Second preference flavor	Grenadine-Strawberry	Cinnamon-Peppermint
Least preference flavor	Cinnamon-Peppermint	Grenadine-Strawberry
Category - D		
First preference flavor	Strawberry-lemon	Orange-Lemon
Second preference flavor	Butterscotch	Custard-Mint-Strawberry
Least preference flavor	Custard-Mint-Strawberry	Anise

flavors. The flavor acceptance is also affected by age. In general, children like flavored fruit syrup, adults prefer a more acid taste, while many older adults find mint or wine flavors more agreeable. Flavors are selected based on the taste of the drug to be incorporated [6].

A questionnaire-based study of 414 primary care patients (65.9% children) in Saudi Arabia examined non-adherence to short-term antibiotic therapy. One of the reasons for non-adherence to the medication is the bitter taste of the drug [10]. Retrospective studies found that medicines with negative palatability negatively influenced medication adherence, whereas drugs with good palatability positively influenced adherence [1].

CONCLUSION

In conclusion, the taste of syrup should be taken into account by the healthcare professionals before prescribing it to the children. The creation of a good syrup taste using flavors may lead to better patient adherence to the medication.

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AUTHOR'S CONTRIBUTIONS

Consider the first author and second author as first authors as both have contributed equally in this study. Dr Tirin Babu and Dr George Mathew Panachiyil were equally involved in the design of the study, literature search, data collection, manuscript preparation, reviewing, editing and drafting of the manuscript to the journal.

CONFLICTING INTERESTS

The authors declared no potential conflicts of interests concerning authorship, and publication of this article.

ETHICAL APPROVAL

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