Donation of Spacers Made from PET Bottles in the Treatment of Children with Asthma An Experience Report

Gabriella da Rosa Cumerlato
University Center of Brusque, Brusque-Santa Catarina
ababi.dotti@unifebe.edu.br

Gabriela Fagundes Assi
Centro Universitário de Brusque, Brusque-Santa Catarina
gabriela.assi@unifebe.edu.br

Bárbara Paula Pfutzenreuter
University Center of Brusque, Brusque-Santa Catarina
barbarapfu@unifebe.edu.br

Gabriella widderhoff Ribeiro da Silva
University Center of Brusque, Brusque-Santa Catarina gabriellawidderhoff@unifebe.edu.br

Mariani Schmidtt Bertoldo
University Center of Brusque, Brusque-Santa Catarina
mariani.bertoldo@unifebe.edu.br

Nayane Rodrigues Longhi
University Center of Brusque, Brusque-Santa Catarina
nayane.longhi@unifebe.edu.br

Maria Eduarda Busnello Schmidt
University Center of Brusque, Brusque-Santa Catarina
maria.schmidt@unifebe.edu.br

ABSTRACT
Asthma is an atopic disease with inflammatory characteristics, defined by a history of respiratory symptoms associated with variable airflow limitation (LEAL, 2023). The pharmacological treatment of asthma aims to control symptoms and prevent exacerbations, with inhaled therapy being the fastest, most effective, and least systemically impactful method. When used correctly, it significantly optimizes therapeutic effects (LEAL, 2023).

Keywords: Spacers, Asthma, Inhaler, Pediatric Treatment.

1 INTRODUCTION

Asthma is an atopic disease with inflammatory characteristics, defined by a history of respiratory symptoms associated with variable airflow limitation (LEAL, 2023). The pharmacological treatment of asthma aims to control symptoms and prevent exacerbations, with inhaled therapy being the fastest, most effective, and least systemically impactful method. When used correctly, it significantly optimizes

therapeutic effects (LEAL, 2023). Spacer devices are commonly used in this treatment modality to improve drug delivery. This paper aims to report the experience of the Academic Pediatric League in conducting the "Recycle & Breathe" campaign. The campaign's goal was to develop effective alternatives to increase the adoption of spacers in inhalation therapy for chronic respiratory diseases.

2 OBJETIVO

Collect PET bottles to make homemade spacers and donate them to children with chronic respiratory diseases in order to provide support for inhalation therapy.

3 CASE DESCRIPTION

To carry out the project, on March 6, 2023, the proposal was presented to the college coordination, requesting support in promoting the campaign and assistance in receiving donations. The collection of bottles began on March 27 with the goal of gathering 300 bottles, but the target was already reached on the second day of the campaign. On April 10, the collection was closed, and more than a thousand PET bottles were received. The next step was the assembly of the spacers, which was done on May 15 with the help of medical students. In addition to cutting the bottles into the appropriate shape, they were also customized to make them more playful for the children who will use them. Once they were ready, they were distributed to the city and surrounding areas, including Basic Health Units, pediatric and pneumology outpatient clinics, hospitals, and polyclinics.

4 DISCUSSION

It is estimated that asthma affects approximately 334 million people worldwide. Prevention of exacerbations is the main cause to avoid the high mortality rate from the disease, especially when considering that approximately 250,000 annual deaths worldwide are due to this condition (Pitchon, 2020). In relation to the pediatric population, they have a high prevalence and severity of symptoms, mainly because their airways have a smaller caliber and they have less tolerance to the hyperactivity that occurs with this disease (FÉLIX AFS, et al., 2019).

Furthermore, the importance of asthma control lies in the well-being of patients and significantly reduces the use of healthcare services. Asthma results in approximately 10 million missed school days per year. Moreover, in Brazil, between 2014 and 2015, there were approximately 81,664 hospitalizations for asthma in children under 14 years of age (GOMES A, et al., 2017).

Within the context of treatment, the use of spacers is recommended for children under six years of age to prevent particles from settling in the mouth and oropharynx, reducing adverse effects such as dysphonia and candidiasis (NETO HJC, et al., 2018). Additionally, spacers are recommended because they

allow for the correct use of medication, increase the amount of active compound that reaches the lungs, and facilitate the inhaler technique (GRUPO IBES, 2020; ROCHA et al., 2021).

It is worth noting that nebulization is the most widely used method for performing inhalation therapy for chronic respiratory diseases. However, inhalation treatment can be hindered by issues related to the use of electrical energy, associated costs, portability difficulties, and a high risk of contamination by fungi and bacteria (JANSSENS et al., 2005; DOLOVICH et al., 2005). Another issue is that spacers are designed for individual use, which makes their reuse difficult. In 2014, the average cost of acquiring industrial pediatric spacers (volume 250 ml) at HCPA was R$ 49.00. In this context, homemade spacers made from plastic bottles are an alternative with demonstrated effectiveness in clinical studies (ZAR et al., 1999, p. 979-982; RODRIGUEZ-MARTINEZ et al., 2008).

5 CONCLUSION

With this report, we hope to highlight the importance and effectiveness of spacers in the treatment of asthma in children. We aim to raise awareness of the need for more affordable and accessible spacers for the general population, especially in underprivileged communities, such as those covered by this project in Brusque.

REFERENCES

FÉLIX AFS, et al. Controlo da asma infantil: principais fatores associados. Revista electrónica trimestral de Enfermería, 2020; 57: 15-28.

FONTAN FCS, et al. Quality of life evaluation and associated factorsin asthmatic children and adolescents attended in a specialized outpatient clinic. Rev Paul Pediatr, 2020; 38:e2018172

GOMES A, et al. Association of self-efficacy of parents/caregivers with childhood asthma control parameters. Rev Esc Enferm USP, 2017; 51: e03282.

GRUPO IBES. Uso correto de bombinha e espaçador é essencial para o controle da asma. Grupo IBES – Gerando valor para a saúde desde 2012, Notícias, 2020

NETO HJC, et al. Diretrizes da Associação Brasileira de Alergia e Imunologia e Sociedade Brasileira de Pediatria para sibilância e asma no pré-escolar. Arq Asma Alerg Imunol., 2018; 2(2): 163-208.

PITCHON, R. R., ALVIM, C. G., ANDRADE, C. R. D., LASMAR, L. M. DE L. B. F. L, CRUZ, Á. A., & REIS, A. P. DOS (2018). Mortalidade por asma em crianças e adolescentes: uma causa de morte quase sempre evitável. Rev Med Minas Gerais, 28(Supl 6), S280607.

SIQUEIRA KM, et al. Ser criança com asma: assumindo suas particularidades e lidando com restrições. Rev. Eletr. Enf. [Internet], 2017; 19: 1-10.