

Effects of Drugs Prescribed for Asthma on Dental Health

Dr. Ning Zhong

Department of Dental Science, Donghua University, Shanghai, China

ABSTRACT

Background: Asthma is a chronic, heterogeneous respiratory pathology characterized by reversible airway inflammation. Therapeutics focus on symptom reduction and control, aimed at preserving normal pulmonary function and inducing bronchodilatation. The objective of this review is to describe the adverse effects produced by anti-asthmatic drugs on dental health, according to the reported scientific evidence. A bibliographic review was carried out on databases, such as Web of science, Scopus, and Science Direct. Most anti-asthmatic medications are administered using inhalers or nebulizers, making it impossible to avoid contact of the drug with hard dental tissues and oral mucosa, and thus promoting a greater risk of oral alterations, mainly due to decreases in the salivary flow and PH. Such changes can cause diseases, such as dental caries, dental erosion, tooth loss, periodontal disease, bone resorption, as well as fungal infections, such as oral candidacies Perception of dental graduate students regarding Asthma between 18 to 26 years of age in Tuen Mun.

Aim: To investigate Knowledge regarding drugs prescribed for Asthma and their Adverse effects on dental health among dental under graduate students.

Objective:. The main objective of this article were to Knowledge regarding drugs prescribed for Asthma and their Adverse effects on dental health among dental under graduate students based on age and year of study.

Method: A cross sectional study was conducted among the dental students (I,II, III, IV,INTERN) in a tertiary care teaching hospital, Tuen Mun, using a web-based tool called forms pro, a semi-structural online questionnaire was designed and distributed to the students in order to fill. Descriptive statistics and chi-square test were calculated using SPSS version-29. A p- value <0.05 was used to evaluate statistical significance.

Result: A total of 220 students took part with females (60%) and males (40%). Age of participant's ranges from 17-24 years. In this study female students have more knowledge and awareness regarding Human Identification and Fingerprints compared to males. Among all the students IV-BDS have more knowledge, followed by III-BDS,I BDS,II BDS and Intern.

Conclusion: The general lack of precise reporting and comparison of confounding variables in reviews and original research studies as well as the limited number of reviews for each health behaviour constrains the generalization and interpretation of results. Further research is needed on study-level to investigate effects of versatile determinants of e/m Health efficiency, using a theoretical foundation and additionally explore the impact of social contexts and more sophisticated approaches like just-in-time adaptive interventions.

Keywords: Asthma; Drug Therapy; Dental Health.

INTRODUCTION

Asthma is a heterogeneous disease, usually characterized by a chronic inflammatory disorder of the airways, elevated hyper-reactivity of the tracheobronchial tree, increased mucus production, and by symptoms, such as wheezing, coughing, chest tightness, and dyspnea, that can vary over time and in intensity, affecting people of both sexes, of all ages, and all races. In recent years, its prevalence has increased significantly in most countries, with high rates of morbidity in children and mortality in adults, affecting more than 300 million people worldwide.

Prior to adolescence, the prevalence of asthma is higher in men than in women, but this tends to reverse after adolescence, because hormone levels in many women of childbearing age and the use of contraceptives can directly interfere with the treatment of asthma [8,9]. Mortality has increased significantly in recent years.

According to the World Health Organization (WHO), the world death toll was estimated at 416,000 in 2016, mainly affecting developing countries . More than 80% of these deaths have occurred in low- and middle-income countries

METHODOLOGY

- a) **Study design and area:** A cross sectional study was carried out at tertiary care teaching hospital, Tuen Mun.
- b) **Study population:** The health care students including those of I, II, III and IV year and interns, who responded to the online questionnaire sent through social media.
- c) **Study instrument:** A self-administered questionnaire was designed, based on the knowledge and awareness the questionnaire had total of 15 questions and through online forms pro link. Each participant must fill their demographic data like name, age, year of study. Participant must select one option from the answers provided against the question. The questions were based on knowledge awareness regarding Human Identification and Fingerprints.
- d) **Pilot study:** A pilot study was conducted on a group of students to assess the validity and reliability of the study.
- e) **Sampling method:** The sampling method used is convenience method.
- f) **Inclusion criteria:** Students who were interested in the study and who are willing to participate are included.
- g) **Exclusion criteria:** Students who are not willing to participate are excluded.
- h) **Organizing the study:** The purpose of the study was explained in a short note which was sent along with the link via social media participants, were asked to select one option from the answers provided against the questions.
- i) **Statistical analysis:** Data from the filled questionnaire was conducted in a tabular form in an excel worksheet and evaluated for analysis. The analysis was performed using SPSS 29 version.
- j) **Result:** Out of 220 participants, majority of them belong to 21 – 24years age group. The following are the percentages of students who took part in the survey: I BDS (20.9%), II BDS (19.1%), III BDS (21.4%), IV BDS (27.7)and INTERN (10.9%)The response rates were 38.5% females and 61.5% males. On comparison knowledge and awareness among students, females have more knowledge than males. Among all the students IV-BDS have more knowledge, followed by III-BDS,I BDS,II BDS and INTERN.

Table 1: Demographic Profile of Respondents

Age Groups

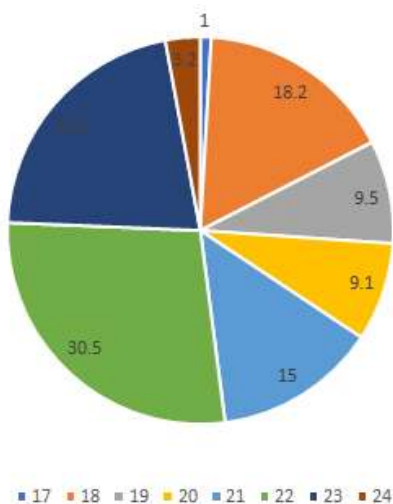
Demographic profile	No of respondents	% Of respondents
17	2	1
18	18	8.2
19	21	9.5
20	20	9.1
21	33	15
22	67	30.5
23	52	23.6
24	7	3.2
Mean Age	21.36	
SD Age	1.74	

Gender

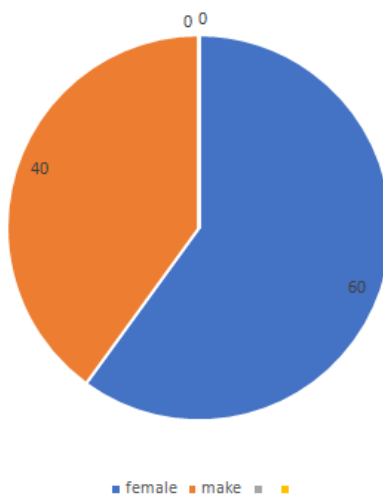
Demographic profile	No of respondents	% Of respondents
MALE	88	40%
FEMALE	132	60%

Year of Study

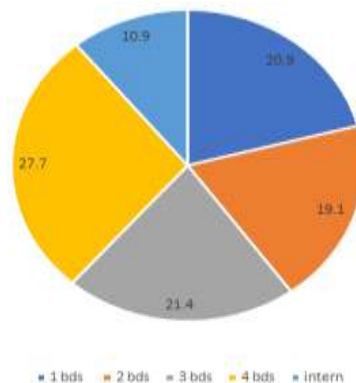
Demographic profile	No of respondents	% Of respondents
1 st year	46	46
2 nd year	42	42
3 rd year	47	47
4 th year	61	61
5 th year	24	24
Total	220	100



Graph – 1a: Demographic details – Age



1-b: Demographic details – Gender



1-c: Demographic details – Year of Study

Table-2: Distribution of study subjects based on responses to items

Items	Responses (Options)							
	A		B		C		D	
	N	%	N	%	N	%	N	%
Q1	144	65.5	39	17.7	29	13.2	8	3.6
Q2	102	46.4	43	19.5	48	21.8	27	12.3
Q3	52	23.6	64	29.1	86	39.1	18	8.2
Q4	95	43.2	40	18.2	60	27.3	25	11.4
Q5	71	32.3	70	31.8	55	25	24	10.9
Q6	62	28.2	63	28.6	50	22.7	45	20.5
Q7	92	41.8	57	25.9	52	23.6	19	8.6
Q8	85	38.6	55	25	57	25.9	23	10.5
Q9	63	28.6	56	25.5	56	25.5	45	20.5
Q10	118	53.6	52	23.6	29	13.2	21	19.5
Q11	88	40	63	28.6	46	20.9	23	10.5
Q12	74	33.6	65	29.5	47	21.4	34	15.5
Q13	78	35.5	64	29.1	45	20.5	33	15
Q14	63	28.6	61	27.7	52	23.6	44	20
Q15	67	28.21	66	30	48	21.8	44	20

DISCUSSION

Thomas et al. pointed out that most asthma medications are significantly associated with alterations in oral health, and patients undergoing anti-asthma treatment should be instructed on the use of their prescribed inhalers, since constant and direct contact between the formulations and the oral cavity increases the risk of oral tissue affection and, therefore, the development of pathologies. Some dry powder inhalers are known Dent. J., 11, 113 17 of 23 to contain sugar to increase the tolerability of the taste of the drug when administered. Frequent oral inhalation of sugar combined with a reduced salivary flow and decreased saliva pH may contribute to an increase in dental caries

CONCLUSION

The use of anti-asthmatic medications can lead to a series of oral alterations due to an imbalance in the protective factors associated with the oral cavity, which can cause diseases, such as dental caries, dental erosion, tooth loss, periodontal disease, bone resorption, as well as fungal infections, such as oral candidiasis. These alterations are mainly due to the decrease in salivary flow, which leads to a reduction in the protection of the oral cavity by saliva due to reduced levels of defense components, such as IgA, calcium, and lactoferrin, among others. Inhalation therapy is closely related to the production of these adverse effects due to the direct contact of the drug with the oral cavity and oropharynx, so it is essential to educate asthmatic patients about preventive measures, such as mouth rinses with sodium bicarbonate or neutral sodium fluoride after using inhalers; chewing sugarless gum for at least one minute after drug administration to help neutralize the salivary pH, stimulate salivary flow, and buffer oral acids; or even the use of a spacer device during the administration of dry powder inhalers to minimize contact between the drug and the oropharynx.

REFERENCES

- [1]. Boonpiyathad, T.; Sözen, Z.C.; Satitsuksanoa, P.; Akdis, C.A. Immunologic Mechanisms in Asthma. *Semin. Immunol.* 2019, 46, 101333.
- [2]. Gani, F.; Caminati, M.; Bellavia, F.; Baroso, A.; Faccioni, P.; Pancera, P.; Batani, V.; Senna, G. Oral Health in Asthmatic Patients: A Review: Asthma and Its Therapy May Impact on Oral Health. *Clin. Mol. Allergy* 2020, 18, 22.
- [3]. Quirt, J.; Hildebrand, K.J.; Mazza, J.; Noya, F.; Kim, H. Asthma. *Allergy Asthma Clin. Immunol.* 2018, 14, 1–16.
- [4]. O’Byrne, P.; Fabbri, L.M.; Pavord, I.D.; Papi, A.; Petruzzelli, S.; Lange, P. Asthma Progression and Mortality: The Role of Inhaled Corticosteroids. *Eur. Respir. J.* 2019, 54, 1900491.
- [5]. Dharmage, S.C.; Perret, J.L.; Custovic, A. Epidemiology of Asthma in Children and Adults. *Front. Pediatr.* 2019, 7, 246.
- [6]. Kudo, M.; Ishigatsubo, Y.; Aoki, I. Pathology of Asthma. *Front. Microbiol.* 2013, 4, 1–16.
- [7]. Stern, J.; Pier, J.; Litonjua, A.A. Asthma Epidemiology and Risk Factors. *Semin. Immunopathol.* 2020, 42, 5–15.
- [8]. Shah, R.; Newcomb, D.C. Sex Bias in Asthma Prevalence and Pathogenesis. *Front. Immunol.* 2018, 9, 2997.
- [9]. Rehman, A.; Amin, F.; Sadeeqa, S. Prevalence of Asthma and Its Management: A Review. *J. Pak. Med. Assoc.* 2018, 68, 1823–1827.
- [10]. Bostantzoglou, C.; Delimpoura, V.; Samitas, K.; Zervas, E.; Kanniss, F.; Gaga, M. Clinical Asthma Phenotypes in the Real World: Opportunities and Challenges. *Breathe* 2015, 11, 186–193.
- [11]. Alahmadi, T.S.; Banjari, M.A.; Alharbi, A.S. The Prevalence of Childhood Asthma in Saudi Arabia. *Int. J. Pediatr. Adolesc. Med.* 2019, 6, 74–77.
- [12]. Tilwani K., Patel A., Parikh H., Thakker D. J., & Dave G. (2022), “Investigation on anti-Corona viral potential of Yarrow tea”, *Journal of Biomolecular Structure and Dynamics*, 1-13.
- [13]. Parikh, H. (2021), “Diatom Biosilica as a source of Nanomaterials”, *International Journal of All Research Education and Scientific Methods (IJARESM)*, Volume 9, Issue 11.
- [14]. Parikh, H. (2021), “Algae is an Efficient Source of Biofuel”, *International Research Journal of Engineering and Technology (IRJET)*, Volume: 08 Issue: 11.