ORIGINAL ARTICLE

Interrelation study between drugs and oral lesion development in patients with special needs

Briana Góes Monteiro [1]
Maria Cecília Fonsêca Azoubel [2]
Juliana Borges de Lima Dantas [3*]
Alena Ribeiro Alves Peixoto Medrado [4]

Abstract:

Introduction: Special dentistry is an area that of dentistry that concerns itself with treating patients with special needs. To greater knowledge of the specific special needs by the dentist, there is an urgent need to emphasize the importance of proper odontologic treatment, whether in office or in a hospital environment to this population **Objectives:** The aim of this study was to correlate the use of drugs in patients with special needs with the development of oral lesions and to better characterize this population. Materials and **Methods:** This was a quantitative and qualitative cross-sectional study which included special needs patients from the Brazil's Universal Health-Care System. Analysis of medical records and intraoral physical examination was performed for 88 patients and descriptive data was extracted. **Results:** The patient population was predominantly female (54.5%) and older than 18 years of age (62.5%). A higher frequency of neurological and psychomotor disorders (54.5%), hypertension (29.5%) and diabetes mellitus (15.9%) was found. A total of 21.6% patients reported a"dry mouth." sensation. The drugs most frequently used were anticonvulsants (46.5%), anxiolytics (35.2%) and anti-hypertensives (34%). The highest percentage of lesions corresponded to gingival enlargement (19.3%), followed by gingivitis (10.2%) and candidiasis (7.9%). **Conclusion:** It is expected that results derived from this research can contribute to a better understanding of the interrelationship between the use of pharmaceutical agents and the appearance of lesions in the oral mucosa, as well as to indirectly improve oral health of certain patient populations.

Keywords: Disabled Persons; Pathology, Oral; Pharmacology; Mouth Mucosa; Metabolic Side Effects of Drugs and Substances.

[1] Escola Bahiana de Medicina e Saúde Pública, Cirurgia - SALVADOR - BA - Brasil
[2] Escola Bahiana de Medicina e Saúde Pública, Estomatologia - SALVADOR - BA - Brasil
[3] Faculdade Adventista da Bahia, Estomatologia - Cachoeira - Bahia - Brasil
[4] Escola Bahiana de Medicina e Saúde Pública, Processo Interativo Órgãos e Sistemas - SALVADOR - BA - Brasil

Correspondence to:
Juliana Borges de Lima Dantas.
E-mail: judyborges@gmail.com

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INTRODUCTION

Special dentistry is an area that of dentistry that concerns itself with treating patients with special needs, and an intimate knowledge of the clinical profile of these individuals is essential for the delivery of appropriate dental care in this population. Health professionals face major challenges to adequately treat these individuals considering the large numbers of special needs patients seeking dental care and taheir lack of access to care[1].

Most of the time, special needs patients present with specific disorders, well covered by clinical research, which helps to guide care, and contributes to better knowledge of this population. Individuals who exhibit more rare disorders, however, often do not have access to a dental surgeons services[2].

In addition to greater knowledge of the specific special needs by the dentist, there is an urgent need to emphasize the importance of proper odontologic treatment, whether in office or in a hospital environment to this population which often has limited access to care[3]. During the service, a thorough anamnesis and physical examination are of significant importance to reveal connections between the systemic disease and the patient's chief complaint. This process directs the professional towards a better diagnosis and consequently aids in the institution of the most appropriate treatment[1,4].

Special dentistry is an area of practice that treats patients with special needs who suffer from unusual systemic disorders that create unique individual challenges. Conceptualizing and categorizing appropriately the specific need of each patient is essential for the development of a holistic plan of each individual patient[1].

According to the International Association of Dentistry for Patients with Special Needs (IADH-International Association for Disabilities and Oral Health), these patients are classified into the following categories: 1. intellectual disabilities; 2. physical disabilities; 3. birth defects; 4. behavioral disorders; 5. psychological disorders; 6. sensory, auditory and communication disorders; 7. chronic systemic diseases; 8. endocrine/metabolic diseases; 9. social deviations; 10. special physiological states. In each of these situations, patients may use a wide variety of medications with potential effects in the oral cavity[1]. In fact, the interrelationship between oral and general health reinforces the need of a comprehensive treatment plan as the oral manifestation of certain systemic diseases may not only contribute to the worsening of patients' systemic health but also increase the risk of failure of the dental treatment[5]

The present investigation aimed to correlate the use of medications used by this population with the development of buccal alterations, as well as to describe the profile of users of a public service focused on the care of these individuals.

MATERIALS AND METHODS

The research was approved by the Ethics Committee in the Bahiana School of Medicine and Public Health (register number 410,468), and the procedures followed were in accordance with the Helsinki Declaration of 1975, as revised in 2000.

A cross-sectional observational study was conducted over 12 months (2015 - 2016), with a sample composed of 59 patients from the special dentistry clinic of Bahiana School of Medicine and Public Health, 14 patients from the special clinic of the Hospital General Roberto Santos, and 15 from the ambulatory office located in the Institution "Lar Vida", from Salvador, Bahia, Brazil.

A total of 88 individuals were enrolled and the care of each of these was provided via the above mentioned institutions which function within the Unified Health System (Sistema Único de Saúde or SUS, Brazil's Federal Universal Healthcare System). Patients and/or guardians signed an informed consent to participate in this study. In addition to the clinical examination, the medical records of these patients were analyzed and data was extracted, including gender, age, skin color, chief complaint, systemic condition, presence or absence of oral injury, salivary auto perception and current medication use. The patients were then classified into groups by systemic condition, such as diabetes mellitus, arterial hypertension, neuropsychomotor disorder, genetic syndromes, chronic kidney failure, hepatitis, and cirrhosis.

Patients with diagnosis of a systemic disorder that were using at least one type of scheduled medication were included in the survey. Patients deemed to be healthy, as defined by the American Society of Anesthesiologists physical status classification system category I (ASA I) were excluded from the study.

A single examiner performed oral examination using wooden spatula and sterile gauze under the dental focus lighting for identification of possible pathologies present in the oral mucosa. Examinations revealed miriad mucous membrane lesions such as gingival hypertrophy (due to inflammatory fibrous hyperplasia or gingival hyperplasia), candidiasis, aphthous lesions and hyperkeratosis. These, when identified, were entered in an EXCEL spreadsheet in Microsoft Office Professional Plus 2010 software, built specifically for the study.

For the quantitative variable (age), an arithmetic mean was obtained. For the qualitative variables (sex, origin, medical and dental history, and type of special need), a one-dimensional frequency table was created and the respective percentages documented.

RESULTS

Of the 88 patients participating, 54.5% were female and skin color was 39.8% were dark skinned (39.8%). The age of patients ranged from 4 to 81 years, with an average of 36.8 years as demonstrated in Table 1.

Table 1. Sample characteristics related to the sex, self-perception of skin color and stratification by age.

Variables		n	%
Sex			
	Female	48	54.5
	Male	40	45.5
Skin color			
	Melanoderma	35	39.8
	Faioderma	31	35.2
	Leucoderma	19	21.6
	Not listed in the Chart	3	3.4
Stratification by age			
	Over 18 years	55	62.5
	Under 18 years	19	21.6
	Elderly	13	14.8
	Not in the Chart	1	1.1

Systemic conditions of higher prevalence in the sample were neurological and psychomotor disorders (54.5%), hypertension (29.5%) and diabetes mellitus (15.9%). To a lesser extent, genetic syndromes (9%), liver diseases (7.9%) and chronic renal failure (6.8%) were also commonly present. Systemic conditions that did not fit any of the categories in the classification scheme were categorized as "other conditions" (14.7%): these included chronic leukemia, target organ damage, stroke, breast cancer, left ventricle hypertrophy, hypercholesterolemia, hyperthyroidism, hypothyroidism, cardiomyopathy, arrhythmia, asthma and arthritis.

Patients were also asked about their perception of changes in salivary flow resulting from prolonged pharmacologic agents use, as shown in Table 2.

Table 2. Evaluation of the self-perception of the salivary flow of sample persons.

Salivary Flow	n	%
Did not note changes	33	37.5
Xerostomia	19	21.6
Hypersalivation	7	7.9
They did not inform (N/A)	29	33

Anticonvulsants were the most frequently used medications in this population, as seen in Table 3. Drugs that fit more than one pharmacologic category counted more than once.

Table 3. Pharmacological categories used by patients.

Pharmacological Category	n	%
Anticonvulsants	41	46.5
Anti-anxiety drugs	31	35.2
Antihypertensives	30	34
Antipsychotics	23	26.1
Muscle relaxers	16	18.1
Antidiabetic	10	11.3
Antihistamines	10	11.3
Cholesterol reducers	9	10.2
NSAIDS	8	9
Antipyretics	7	7.9
Painkillers	7	7.9
Antiplatelet drugs	7	7.9
Antihistamine	6	6.8
Hormones	5	5.6
Antispasmodic	5	5.6
Vitamins	4	4.5
Antidepressants	3	3.4
Antiparkinson agents	2	2.2
Antiarrhythmics	2	2.2
Corticosteroids	2	2.2
Antibiotics	2	2.2
Antidopaminergic	2	2.2
Diuretics	2	2.2
Anticoagulants	2	2.2
Others	10	11

As can be noted in Table 4, intraoral evaluation confirmed the diagnosis of wide variety of lesions in oral mucosa. The most commonly observed lesions were gingival hypertrophy (19.3% of patients) followed by gingivitis (10.2%) and candidiasis (7.9%).

Table 4. Lesions in the oral mucosa visualized during the intraoral clinical examination.

Oral Lesions	n	%
Gingival hypertrophy	17	19.3
Gingivitis	9	10.2
Candidiasis	7	7.9
Angular cheilitis	4	4.5
Canker sores	3	3.4
Abscesses	3	3.4
Actinic cheilitis	1	1.1
Varicose veins	1	1.1
Nevus	1	1.1
Lichen planus	1	1.1
White line in the mucosa	1	1.1
Hyperkeratosis	1	1.1
Hemangioma	1	1.1
Ulcerated lesions	1	1.1
Flaking of mucosa	1	1.1
No amendments	46	52.2

Table 5 illustrates the interrelationship of variables, in regard to the systemic condition, pharmacologic agent category, changes in soft tissue and salivary gland disorders.

Table 5. Correlation of variables (systemic condition, pharmacological category, oral lesions, and salivary flow).

Systemic condition	Pharmacological category	Changes in soft tissue	Salivary gland Dysfunction
Neuropsychomotor disorders	Anticonvulsants	gingival hyperplasia	Xerostomia
(n=48; %= 54,5)	(n=40; 83,2%)	(n= 8; 16,6%)	(n= 7; 14,6%)
Arterial Hypertension	Antihypertensives	gingival hyperplasia	Xerostomia
(n= 26; %= 29,5)	(n= 23; 88,3%)	(n= 3; 11,5%)	(n=12;46,1%)
Diabetes Mellitus	Antidiabetic	gingival hyperplasia	Xerostomia
(n= 14;%= 15,9)	(n=14; 100%)	(n= 3; 21,4%)	(n= 7; 50%)

DISCUSSION

This study aimed to evaluate the relationship between the use of certain medications and the development of oral lesions in patients with special needs, as well as to establish the profile of this population as represented by the users of the 3 Special Dentistry clinics dedicated to their services above mentioned. The target audience was chosen due to the scarcity of works in literature that comment on the use of pharmacologic agents and their possible adverse effects on oral cavity of special needs patients. In Brazil, Bertoli and Ferronato[6], Oliveira et al.[7] and Santos et al.[8], reported a similar profile. Their work emphasized the importance of a better understanding of the specific needs of this population for better quality of care and the necessity of further research to better characterize these patients with special needs.

Regarding the nature of the special needs presented by the patients, Bertoli and Ferronato[6], found in their sample, that the following systemic conditions were the most prevalent: neuropsychomotor development retardation (40.4%), epilepsy (12.3%) and down syndrome (8.7%). In the sample of Santos et al.[8], it was noted that 106 (29.3%) patients had some type of mental illness; 87 (24.1%), epilepsy or convulsions; and 113 patients (31.3%) had high blood pressure, these being the most frequent disorders. This research corroborates findings of these two researchers which noted that the highest percentage of the sample comprised neuropsychomotor disorders (54.5%).

The drugs were divided into a variety of classes, and many of them are directly related to the perception of xerostomia in patients who use these drugs for a prolonged period[9]. In the present study, it was noted that even those patients who were willing to answer questions relating to xerostomia were unsure of their responses since the feeling of dry mouth can occur in an attenuated manner. As an example, a high percentage of individuals included in the neuro psychomotor disorders group (43.7%) responded "not sure".

We can deduce that the deficits associated with the conditions represented in this category played a significant role in these patients' responses regarding their perception of xerostomia. Both the hypertensive (46.1%) and diabetic (50%) groups had a higher percentage of individuals who complained of xerostomia. It was noted however that many times these patients made use of multiple drugs. This fact contributed to the difficulty in identifying the drugs triggering changes in the oral cavity.

Notably, however, the interrelation between the xerostomia and drugs, with antihypertensives, antidepressants, antipsychotics, anxiolytics, antihistamines and antiparkinsonics has been well described and evidence shows that these classes of drugs may indeed promote dry mouth[10-14].

Veríssimo et al.[15] conducted a study that collected data of dental records of 186 patients with special needs. In this study, the author found that 53.8% of patients reported the use at least one drug. The most prescribed drugs were hormonal medications (15.6%) and vitamin supplements (12.4%).

Due to the age range of that study's population (3 to 21 years), the data obtained by the author was dissimilar to that in our research. Both works however, are in agreement on the need for further study and a better understanding of factors affecting patients with special needs.

Haas et al.[16] analyzed a sample composed of 200 individuals with psychiatric disorders. Many individuals in that sample presented with salivary flow reduction, which had xerostomia as its main consequence but also contributed to the increased incidence of other alterations in the oral cavity. This study concerned itself only with patients with psychiatric disorders, differing from the present research, which encompassed all individuals with special needs. In both studies, however, it is apparent that neuropsychomotor disorders are heavily represented in the special needs population.

It is known that the use of drugs has been linked to the onset of oral alterations. Correlation of specific oral alterations to individual drugs is difficult in this popluation, as patients, most of the time, using a variety of drugs[9]. The present study aimed to document the most prevalent lesions in the sample examined and highlight the drugs that could be contributing to the development of these lesions.

The enormous number of patients without any injury is not unexpected as the recruitment of volunteers for the study occurred at random, so that the age range was very large. We hypothesize that the presence of lesions is more common in the elderly, since the drug adverse events are cumulative[7]. Gingival hyperplasia was the most prevalent lesion (19.3%), followed by gingivitis (10.2%) and candidiasis (7.9%), respectively. Since there were many individuals who use psychotropic drugs, such changes could be linked to the use of these drugs.

Gingival hyperplasia was the most prevalent lesion in patients with neuropsychomotor disorders, as well as in the two other most prevalent systemic conditions. Even though hyperplasia developed in only eight (16.6%) patients, such injury is closely linked to the prevailing drug types present in the first subgroup. Phenytoin is an antiepileptic medication that has been closely linked to the development of gingival increase in those who use it continuously.

Other medications such as phenobarbital and valproic acid are also closely linked to the development of these lesions. A deficiency in oral hygiene can cause inflammation and result in gingival enlargement making it difficult to establish if the gingival enlargement is due medication use or lack of oral care. The suspension, reduction or replacement of drugs can induce the regression of hypertrophy. In cases of excessive increase, the best treatment would be surgical[17-20].

Gingivitis is the second most frequent lesion in all patients examined. It is important to note that patients who presented with gingival increase associated with plaque were considered to have gingivitis for the purpose of this study. It has been reported that drugs, by themselves, do not promote gingivitis. Poor oral hygiene however, when associated with medications can change the salivary flow, and may predispose patients to gingivitis or worsen gingivitis that is already present picture of gingivitis[10,11,13,14].

The third most common injury in the sample was candidiasis. Four (8.3%) patients with neuropsychomotor disorders, three (11.5%) hypertensive and a (7.1%) diabetic presented this injury, respectively. As with gingivitis, candidiasis also does not arise as a direct effect of the use of medications. This opportunistic infection usually affects patients with diabetes, poor oral hygiene and hyposalivation[21-24].

CONCLUSIONS

The lesions more often found in individuals with special needs were gingival hyperplasia, gingivitis and candidiasis. The large number of study patients with gingivitis suggests a high prevalence of deficient oral hygiene in this population, a fact which may be related lack of motor coordination or to lack of information especially in patients with neuropsychomotor disorders. Also noted in this study were changes of salivary flow in these patients, confirmed by reported self-perception and complaints of xerostomia. We hope that this study will contribute both to a better understanding of factors affecting the management of patients with special needs and to an improvement of the oral health of these individuals, which may in turn positively impact their systemic health.

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