

Chemical Induced Xerostomia Among Institutionalized Elderly

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Subjective presence of dry mouth is most common oral problem among the institutionalized elderly. To assess the subjective presence of xerostomia among institutionalized elderly. Total numbers of 70 subjects older than 65 years institutionalized in one nursing home were evaluated. The subjective presence of xerostomia was determined. To determine the level of expressiveness of xerostomia is used questionnaire recommended by Carda et al. 62.8% from the subjects believed that they had subjective feeling of xerostomia. Most of them, around 40% had mild (xerostomia 1), while around 25% of subjects had severe xerostomia (xerostomia 3). Xerostomia is highly prevalent among institutionalized elderly. Also there is high percentage of institutionalized elderly people who use drugs that can cause xerostomia.

Keywords: xerostomia, drugs, institutionalized elderly, dry mouth

Among the institutionalized elderly, particularly among the oldest one, there is a high prevalence of comorbidity and barriers to provide adequate health care. Disruptive health of these individuals have an impact on oral health itself, especially on the dental status, presence of caries, periodontal health, oral hygiene, toothless, restricted oral functions problems associated with the wearing of the total and partial dentures, the presence of malignant and benign tumors, xerostomia, and other oral conditions that can cause pain or discomfort in the orofacial region.

Oral health in context of quality of life is conditioned by many factors such as dental caries and its complications, untreated and non-extracted tooth roots, diseases of the oral mucosa and numerous oral infections, precancerous conditions and benign and malignant tumors, pain in the temporo-mandibular joint, xerostomia and of course the total or partial toothless [1]. Losing of just one teeth affects on the efficiency of the masticatory function and also have influence on the choice of food and of course nutritional status in elderly people.

Interaction of highly present xerostomia and inability to maintain satisfactory oral hygiene among institutionalized elderly leads to increased occurrence of dental plaque. Therefore the elderly have increased risk for occurrence of caries and periodontal diseases.

Protocols for oral health are mainly based on daily removal of bacterial plaque from teeth, dentures or from both places, but cleaning of the oral mucosa and constant oral hydration have high importance too [2].

Saliva is a crucial element in oral homeostasis, oral functions and maintaining oral health. Most of the bacterial populations that colonize different structures of the oral cavity are eliminated through the process of swallowing. This defensive action of the organism among the elderly is reduced due to the increased viscosity of saliva. Dehydration associated with decreased fluid intake, emesis, diarrhea or polyuria among the institutionalized elderly may worsen this condition. Xerostomia also appears

in patients with diabetes mellitus. Some psychogenic condition and diseases, such as depression, anxiety, stress or fear may also result in xerostomia. In the adult population with Alzheimer's disease or stroke, Gupta et al [3], found that although the patient complains of dry mouth, there is a normal secretion of saliva versus the subjective perception of the patient.

Hypo-salivation is a risk factor not only for the occurrence of dental caries and periodontal disease, but also it is important factor for irregularities of taste, speech problems, trouble swallowing, bad masticatory function and malnutrition. According [4], patients with hypo-salivation has a greater number of teeth with caries presence and more advanced periodontal destruction in comparison with people who have normal salivation. But hypo-salivation can be also associated with other factors such as gender, present systemic diseases, use of drugs and smoking.

More than 400 different medications cause xerostomia as a side effect from their use. Gupta et al [3] and Liu et al [5] in their researches have discovered that more than 80 percent of the most commonly prescribed medications among the institutionalized elderly can cause xerostomia. Some of these groups of medicaments are the following drugs: analgesics, antipsychotics, antihypertensives, anticholinergics, antihistamines, diuretics, narcotics, and other chemotherapy drugs. In the table 1 can be noticed most frequently used drugs in institutionalized elderly that cause xerostomia.

According to one research of Ursache et al [6] the presence of xerostomia is around 60 percent of the institutionalized elderly persons in both sexes equally.

Taking into consideration previously mentioned facts about oral health, the presence of numerous dental problems and increased health needs and poor health among institutionalized elderly the aim of this paper was established - to assess the subjective filling for presence of xerostomia among institutionalized elderly.

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The presented data originate from examination done in the period from May to July 2013 in the department "Mother Teresa", within the PHI Gerontology Institute "13-th November"-Skopje.

Experimental part

The investigation included a total number of 70 subjects older than 65 years. In these institutions, most of institutionalized persons are functionally-dependent individuals, in which chronic diseases are dominant. This multimorbidity leads to serious disability or dependence on the foreign assistance, and on the other hand most of these people have needing long-term care.

When performing this research were excluded all persons who are in the terminal stage of the disease, subjects with dementia and all individuals who have cognitive disorders, patients with nasogastric tube and patients placed on artificial ventilation. Also, all individuals who do not cooperate because of different behavioral disorders, aggression, or do not allow them to perform clinical examination are not included in the studied group. From the survey were also excluded people who do not understand the Macedonian language.

To evaluate the subjective presence of xerostomia we hawed used one simple question "Do you have a feeling of dryness in the mouth?" In the other part of the anamnesis was focused on questions about use of drugs, especially those who can have side-effect, especially those which cause xerostomia (table 1).

To determine the level of expressiveness of xerostomia is used questionnaire recommended by Carda et al [7]. This questionnaire consists of four questions that should be responded by the participants. These questions are:

Question A: Do you have feeling of dryness in the mouth in the last 6 months?

yes/no

Question B: How much saliva do you have in your mouth?

Little/enough/a lot

Question C: Do you have difficulty swallowing food?

yes/no

Question D: Do you have a need to take the liquid to facilitate swallowing food? yes/no

Based on the answers to these questions will determine the level of expressiveness of xerostomia:

- Mild xerostomia or Xerostomia 1: when there was a positive answer only on the question A

- Medium xerostomia or Xerostomia 2: when there were positive answers to the question A and another positive response on one other questions (B, C, or D)

Xerostomia

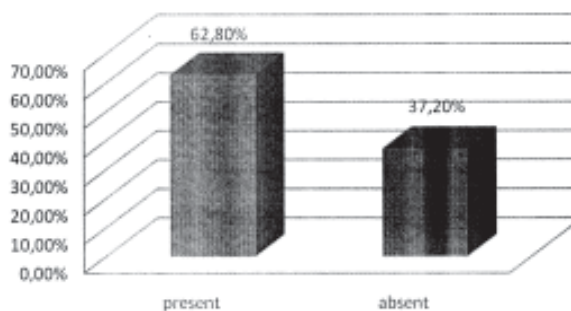


Fig. 1. Presence of xerostomia among the institutionalized elderly

- Severe xerostomia or Xerostomia 3: when expect a positive answer to the question A there were another two positive responses (on questions B, C, or D)

Collected and systematized data were statistically processed. For this purpose we used special software for statistical data processing-Statistica 7.1. Obtained results are presented on tables 1, 2 and 3 and figure 1.

Results and discussions

From the total number of subjects, 62.8% believed that they had subjective feeling of xerostomia i.e. dry mouth (Table 1).

After processing the data, and in accordance with the table 1 can be seen that most of the respondents takes drugs that have a potential xerostomic effects. During the examination it was found that 93.15% of the institutionalized elderly person takes at least one of the medications that are among the drugs which have side effects, which cause xerostomia (table 2).

After processing the data obtained from the questionnaire recommended by Carda et al [7]. It is evident that most of the surveyed participants (40%) had mild (xerostomia1), while 25% of subjects, based on the answers to the questionnaire, had severe xerostomia (xerostomia 3) (table 3).

The importance of saliva in the oral cavity is highly considerable, it participates in lubrication and moistening of the oral mucosa, protects from bacterial and fungal infections and prevent caries cavities through adequate remineralization of dental hard tissues. In elderly xerostomia as a subjective feeling of dryness in the mouth is assumed that is result from decreased secretion of saliva [11].

Drugs that cause xerostomia*
➤ Anticholinergic drugs
➤ Antagonist of alpha - receptors
➤ Antipsiholotics
➤ Diuretics
➤ Antihistamines
➤ Simpatikomimetic drugs
➤ Antihypertensive
➤ Antidepressants
➤ Bronchodilators
➤ Muscle relaxants
➤ Benzodiazepines, hypnotics and opioids
➤ Decongestants
➤ Anticonvulsants
➤ Antidiarrhoeal medication
➤ Anti-inflammatory analgesics
➤ Antiparkinsonic medicaments
➤ Medications for Alzheimer's disease

* Adapted and modified according to: [8, 9, 10]

Table 1
THE MOST COMMONLY USED CLASS
OF DRUGS IN INSTITUTIONALIZED
ELDERLY THAT CAN CAUSE
XEROSTOMIA

Type of medications	Number	Percent
Antidepressants / antipsychotics	33	47.14 %
Antihypertensives	31	44.29 %
Drugs for rheumatoid pains	29	41.43 %
Drugs for cardiovascular diseases	25	35.71 %
Diuretics	15	21.43%
Antidiabetic drugs	13	18.57 %
Drugs to the gastrointestinal tract	12	17.14 %
Antibiotic drugs	11	15.71 %
Medicines for diseases of the prostate	10	14.26 %
Neurological drugs	10	14.26 %
Minerals	9	12.86 %
Vasodilators	7	10.00 %
Antiepileptics	4	5.71 %
Medicaments anti allergic conditions	3	4.29 %
Antifungal drugs	2	2,86 %

Table 2
COMMONLY USED MEDICATIONS
AMONG THE EXAMINED
INSTITUTIONALIZED ELDERLY

Subjective assessment of the severity of xerostomia	Number	Percent
Mild xerostomia (xerostomia 1)	18	40 %
Moderate xerostomia (xerostomia 2)	15	35 %
Severe xerostomia (xerostomia 3)	11	25 %

Table 3
SUBJECTIVE EVALUATION ABOUT THE PRESENCE
OF THE TYPES OF XEROSTOMIA IN
INSTITUTIONALIZED ELDERLY

Xerostomia among institutionalized elderly persons is associated with the occurrence of subjective burning sensation in the oral cavity, problems associated with speech, chewing and swallowing. Also, some drugs (particularly psychotropic medicaments, which are most used among institutionalized elderly) have a negative effect on the oral cavity of subjects especially causing xerostomia. In 62, 8% examined subjects xerostomia was registered (fig.1). Because of its presence, xerostomia increases the risk of oral diseases such as: caries, periodontal disease and oral infections (like glossitis, stomatitis and infection caused by candida albicans), fissures and rhagades at the corners of the lips, difficulty in chewing, swallowing and speaking. Other drugs such as calcium antagonists and antiepileptic drugs can negatively affect the periodontium especially gingival tissues, which can lead to its increase- gingival hyperplasia.

Our results from this study about high use of medications that cause xerostomia were in correlation with results obtained by Sfeatcu et al [12] and Locker [13], as well as with the data published by Avcu et al [14] and Petelin et al [15]. Higher presence of subjective feeling of dryness of the mouth have been reported by the Jovanović et al [16] unlike Marchini et al [17], Kossioni et al [18], Mozafari et al [19] and Triantos [20] who published lower presence of this subjective sensation. Glazar et al [21] found a higher prevalence of xerostomia among institutionalized in comparison with non-institutionalized elderly.

The small number of remaining teeth and the present xerostomia can lead to impaired nutrition which means that elderly people do not take the essential nutrients and all of this can cause malnutrition and hypovitaminosis. Such conditions may be the cause of worsening of the already quite complicated health of institutionalized elderly.

Because of the high prevalence of xerostomia among institutionalized elderly all professionals responsible for their care must be familiar with impact of xerostomia on oral health, nutrition and the general health. Due to high prevalence of xerostomia continuous oral hydration is very important [22].

Staff that care for oral hygiene of institutionalized elderly people need to be trained for mucosal hydration in people with severe xerostomia who are unable to care for themselves. For these types of patients' best to use gauze (preferably sterile) who are immersed in artificial saline and their lips must be coated with neutral creams. People

with xerostomia have to use of chewing gum without sugar or artificial sweeteners, soft gels and solutions, and in the most severe cases artificial saliva can be recommended by a dentist [23].

World Health Organization, the World Dental Association and the International Association for Dental Research suggest new targets for oral health programs by 2020, concerning the reduction of caries and a reduction in the number of teeth extracted due to caries, reducing the lost teeth as a result of the present periodontal disease, reducing the number of people who use tobacco because of its side effects, reducing toothless subjects i.e. increasing the number of remaining natural teeth, and increasing the percentage of persons who satisfy the criteria of optimal oral health. Also provided are guidelines for regular control for oral cancer and xerostomia among older people aged 65-74 years [24- 27].

Conclusions

Based on the obtained data we can conclude that xerostomia is highly prevalent among institutionalized elderly. Also there is high percentage of institutionalized elderly people who use drugs that can cause xerostomia.

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Manuscript received: 18.01.2015