THE IMPACT OF SOCIOECONOMIC STATUS ON PATIENTS WITH ORAL AND MAXILLOFACIAL INJURIES

Abstract. Oral pathologies are among the most common diseases in the world. However, they do not affect all members of the population to the same extent, with differences based on various geographical, social, and economic factors of a given patient. The article has the aim of getting an insight into this matter, by analyzing the social status of 150 patients with OMF injuries, who were treated in the department of Dental surgery at the Dental Municipal Center in Chișinău, throughout the year of 2020.

Keywords: socioeconomic status, oral pathologies, education, number of children

Introduction:

Oral and maxillofacial injuries, despite their nature, are of substantial interest because of their connection with scar tissue formation, facial deformities, influence on body image, and post-traumatic stress disorder.¹

Also, injuries that occur in the oral and maxillofacial region can be a socio-economic burden because of high costs related to the medical care they require, the time the patient spends in the hospital or on sick leave and the economic losses suffered by the patient, employee and state regarding the use of sick days. These costs are doubled in the case of non-fatal injuries.²

Taking everything mentioned above into consideration, more in-depth research
on the causes of oral and maxillofacial injuries is needed, including characteristics that may predispose certain categories of people to experience them. Therefore, the development of national programs ensuring equitable access to medical services should be a priority. Programs for prevention of oral and maxillofacial injuries would lessen the burden on the medical system. Such programs have already been proven efficient.  

**The aim of the study:** The goal of this study is to determine the presence or absence of a connection between the socio-economic status of the patient and oral and maxillofacial injuries.

**Materials and methods:** The study included 50 patients with various oral pathologies, who were treated in the Department of Dental Surgery at the Dental Municipal Center in Chisinau, throughout the year of 2020. The anamnesis of the patients was collected, they were investigated in a clinical and paraclinical manner. We have assessed the following indicators: gender, age, residence, number of children, level of education, diagnosis, comorbidities, type of paraclinical examination carried out, applied treatment and dental formula. Current literature was collected and reviewed using Google Scholar and PubMed. Descriptive analysis was conducted.

**Results:**

According to study data, of the 150 patients, 64% were females and 36% males.

(Fig.1)

![Male vs female ratio](image)

**Fig.1 Male vs female ratio**
The age of patients included in the study:
- < 20 years old – 6%
- 21-30 years old – 18%
- 31-40 years old – 20%
- 41 – 50 years old – 8%
- 51-60 years old – 16%
- > 60 years old – 32%
(Fig.2)

![Age groups included in the study](image)

**Fig. 2 Patients included in the study, by age group**

The majority of patients (76%) were residents of the capital city – Chişinău, 20% lived in rural areas and 4% were from surrounding districts. (Fig.3)

![Patients included by place of residence](image)

**Fig. 3 Patients included in the study by their place of residence**
With regards to the number of children that patients have, 30% of the patients had no children, 16% – one child, 38% – two children, 16% – three and more children. (Fig. 4)

![Proportion of patients by number of children](image)

**Fig. 4 Proportion of patients by number of children**

Regarding educational attainment of patients, 42% had a university degree, 18% finished community college, 14% – vocational school, 6% – had only a high school diploma and 20% completed less than high school. (Fig. 5)

![Patients and their educational attainment](image)

**Fig. 5 Patients and their educational attainment**

The most common diagnosis of examined patients was apical periodontitis, in 44% of cases, followed by pericoronitis - 24%, then periostitis - 22% of cases, trauma – in 2% and other - 8% of cases. (Fig. 6)
Patient comorbidities, as could be expected, included cardiovascular disease in 42% of cases, different disease that could not be categorized – 20%, endocrine disease in 16% of cases, no pathology – 10%, pathologies of the respiratory system in 8% of cases, and hepatitis B in 4% of cases. (Fig.7)

The paraclinical examination that was conducted most frequently was orthopantomography in 88% of cases, followed by retroalveolar radiography in 10% of cases and computer tomography in 2% of cases. (Fig.8)
The treatment provided to patients varied from case to case, but still the most common treatment was tooth extraction, performed in 92% of cases. Incisions and subsequent drainage were performed in 6% of cases and in 2% of cases apicoectomy was performed. (Fig. 9)

Fig. 9 Treatment provided to patients

In order to analyze the state of oral health, we analyzed the number of missing teeth and considered the influence of this indicator on the education level of the patients. The patients that had a university degree, on average had 18.75% of their teeth missing, for those with a community college degree – 25% of teeth were missing, vocational school – 35.7% and for those with no education completed beyond middle school – 17.85% of teeth were missing or extracted. (Fig. 10)

Fig. 10 Percentage of missing teeth and the level of education

We took into account the same indicator of oral health, but this time compared it to the place of residence of patients. Patients who lived in the capital city, on average had 22.5% of their teeth missing. The ones who resided in rural areas –
30.93%. This same data is presented in the following graph. (Fig.11)

![Percentage of missing teeth and place of residence](image1)

**Fig. 11 Percentage of missing teeth and place of residence**

And lastly, knowing that comorbidities can impact oral health, we have analyzed the two indicators and compared them. As a result, we identified the following: patients with cardiovascular disease, on average, had 25.2% of their teeth missing, those with respiratory disease – 36% and those with endocrine disease – 51%. (Fig. 12)

![Percent of missing teeth based on comorbidities](image2)

**Fig.12. Percent of missing teeth based on comorbidities**

**Discussion:** In this study, the social status of the patient was analyzed by taking into account the variables that reflect most objectively convey the socio-economic status of the population. In order to examine the state of oral health of the patient, we decided to analyze the amount of extracted teeth. Thus, we took the proportion of extracted teeth and examined how it may be influenced by external factors, such
as: level of education, sex, age, comorbidities etc.

As a result of the analysis, we can affirm that the divide among genders, with 2/3 of patients being female and 1/3 being male, was not determined necessarily by unequal damage to teeth based on gender, but was more related to negligence on the part of males and their delayed seeking of medical care.\textsuperscript{4}

Age was another indicator taken into account. In this case we notice that a large majority of patients were aged 60 and above. According to the American Dental Association, this is an expected consequence of an aging population, as there is already a trend of increased ponderance of geriatric patients in dental clinics. Also, younger patients less frequently seek care when they have dental problems, and even if they do, the main treatment that the dentist would opts for is not tooth extraction. In this way, we can understand why young people are less represented in the study.

Analyzing the level of the education of patients, we notice that 40\% of them did not have a university degree, which thus qualifies them for lower paid jobs. As evidenced by the literature, the level of education has a direct impact on the quality of life and the health of the oral cavity. In older adults, besides the impact of their education, we also have an impact of an altered perception with regard to oral health, visits to the dentists, and an altered interest in maintaining good oral hygiene.\textsuperscript{5} We also notice that the lower the level of the education is, the larger the percentage of missing or extracted teeth. Our study has shown that patients that have not finished any education beyond middle school and patients with higher education have a significantly low rate of tooth extraction. A logical explanation here is that while making this comparison, a very important indicator wasn’t taken into account – age. So, among patients who had no education, they most likely of a younger age.

In terms of family size, 54\% of patients had two or more children, which allows us to presume that having children in the family implies the appearance of other expenses, which places dental care lower on the list of priorities. Even if dental care is sought, however, we can see that more than 90\% of the time the only treatment option was tooth extraction. Also, among patients with larger families, without higher education, and with a lower salary, significantly less visits are made to the dentist.\textsuperscript{6}
According to study data, the place of residence also influences the state of oral health. This can be explained by the fact that living in a rural area can limit access to dental care, which leads to treatment postponement and late treatments. This has also been demonstrated in a Japanese study, which has revealed that adults living in rural areas are 84% more likely to have dental issues than adults living in urban areas.\(^7\)

Cardiovascular disease, in the case of this study, was the top comorbidity observed among patients. This is to be expected since cardiovascular disease is the top cause of morbidity worldwide and affects \(\frac{3}{4}\) of people living in developing countries.\(^8\) The influence of comorbidities on oral health is multi-direction, that is, the life supporting medication and machines used in treating comorbidities affect oral health and oral hygiene and in turn can trigger or increase risk of pathologies.\(^9\) From our data, we have noticed that among comorbidities, pathologies of the endocrine system appear to have the biggest impact on oral health. The patients in this study who had type II diabetes had more than 50% of their teeth extracted or missing. Diabetes is known to impact micro- and microcirculation and to induce major changes at the level of dental tissues, causing tooth loss. As studies have shown, a person with diabetes is 1.45 times more likely to lose a tooth, than a person without diabetes.\(^10\) More than 90% of the patients with type II diabetes are expected to develop oral problems throughout their lifetime.\(^11\)

In the majority of cases, the paraclinical examination that was performed was orthopantomography, since its the most widely available type of examination. Although computer tomography would offer a better visualization of the working field in our cases, orthopantomography has provided enough information for the study.

The treatment applied in more than 90% of cases was tooth extraction, performed according to indications. The reason for extraction was related the age of patients. In the case of younger patients, tooth extractions tended to be of wisdom teeth or advanced carious lesions, while in the case of adults over 30 years old – periodontal pathologies.\(^13\)

**Conclusion:**

This study has shown the existence of a correlation between the social status of
patients and their oral health state. In order to further evidence a clearer relationship of the two, it is necessary to continue the research and to conduct a wider study, with a more diverse and representative sample of patients.

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