Med. Surg. J. – Rev. Med. Chir. Soc. Med. Nat., Iaşi 2025, 129(2): 447-458 doi: 10.22551/MSJ.2025.02.18

ORAL HEALTH BEHAVIORS IDENTIFIED IN PATIENTS ACCESSING DENTAL EMERGENCY UNITS. A SINGLE CENTER STUDY

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ORAL HEALTH BEHAVIORS IDENTIFIED IN PATIENTS ACCESSING DENTAL EMERGENCY UNITS. A SINGLE CENTER STUDY (Abstract). **The aim** of the study was to identify the profile of patients accessing dental emergency units. **Materials and methods**: A total of 105 patients who accessed emergency units completed a questionnaire. Socio-demographic, medical, and health-related behavioral data were collected. Additionally, medical diagnostics were considered for this research. **Results**: Significant differences were identified concerning sex, indicating that men visited emergency units more frequently in the previous month (1.76 ± 0.43) than women (1.54 ± 0.50). Patients with chronic diseases were more commonly diagnosed with periodontitis and mucosal lesions, and they used less analgesic treatment for dental pain than patients with non-chronic diseases. Age correlated positively with a diagnosis of gingivitis ($r = 0.19$, $p = 0.04$), in the sense that older individuals were more likely to be diagnosed with gingivitis. The results also proved a strong positive correlation between the level of satisfaction regarding dental health and oral hygiene. The study further investigated the importance of marital status, parenthood, and oral health behaviors. **Conclusions**: Socio-demographic and medical data, along with health-related behaviors, are important factors to be considered when providing emergency dental care to patients. Such information helps dentists and policymakers to shape preventive strategies that reduce the number of unhealthy behaviors and oral health issues in patients accessing emergency dental units. **Keywords:** DENTISTRY, PUBLIC DENTAL EMERGENCY UNIT, DENTAL ANXIETY SCALE, ORAL DISORDERS, QUALITY OF ORAL HEALTH.

INTRODUCTION

According to the Global Oral Health Status Report published by the World Health Organization (WHO) in 2022, 2 billion people suffer from caries of permanent teeth, and 514 million children suffer from caries of primary teeth. A global statistical evaluation estimated that 3.5 billion people worldwide (almost 50% of the population) present oral diseases, the most common being dental caries, periodontal disease, oral cancer, oro-dental trauma, or total tooth loss.

Apart from genetic factors or the presence of comorbidities, most oral health-related problems could be prevented by

limiting alcohol consumption, eliminating the consumption of tobacco, ensuring balanced nutrition and a sugar-free diet, adopting safety measures such as using protective equipment during sports and travel, and brushing teeth with fluoride-containing toothpaste (WHO, 2022) (1). Finally, prioritizing overall quality of life, including physical, mental, and social well-being, while maintaining good health and identifying diseases that negatively impact oral health in proper time could prevent oral health-related problems. Therefore, prevention measures such as promoting good health by adopting a healthy diet, a daily dental cleaning routine, and regular dental checkups are among the most important methods to maintain good dental health and quality of life (Jain *et al.*, 2024) (2). Many factors are associated with low quality of oral health life (OHL): sex, age, level of education, financial income, oral health literacy, and oral health-related behaviors (Fisher *et al.*, 2023) (3). Hakeberg and Boman (2017) identified that the lower the socioeconomic position, the poorer the health (4). Tooth brushing less than three times a day and irregular flossing were additional outcomes associated with low OHL (Batista *et al.*, 2017) (5). Poor oral health literacy was found to be independently associated with missed dental appointments (Baskaradoss,2016) (6). These important factors have been pointed out by many other studies. For example, Ueno *et al.* (2013) (7) found that higher oral health literacy leads to more frequent brushing and better oral hygiene. Similarly, Lee *et al.* (2012) (8) demonstrated a strong positive relationship between increased oral health literacy and improved oral hygiene. This study aimed to shape the profile of patients accessing public dental emergency units in the Oradea area, focusing on dental anxiety and the impact of oral disorders on general well-being.

MATERIALS AND METHODS

Participants and Data Collection. The study was conducted in the public dental emergency unit of the Oradea Emergency Hospital. In 2021, clinical records showed that there were 2,260 patients (1,682 adults and 578 children) with a median average of 188 patients per month. A total of 197 patients, both adults and children, were registered for the period June 20th - July 20th in the dental public emergency unit. Printed questionnaires were distributed to patients waiting to undergo dental consultation. The patients were informed about the purpose of the study, about the confidentiality of the collected data, and about their right to withdraw at any time with no consequences. No incentives were offered for those who participated in the research. Completed surveys were collected in a sealed box located in the main hall. The inclusion criteria consisted of patients aged over 18, fully completed questionnaires, and questionnaires completed by the patients themselves and not by their caregivers. This last criterion was applied to select patients (being literate, assuming self-accuracy of data, and having a normal cognitive level of understanding). Ultimately, a

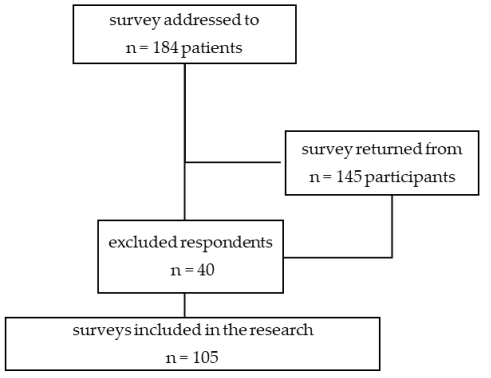

Fig. 1. Study profile.

total of 105 questionnaires were included in the research.

Instruments

A questionnaire was constructed especially for the present study, consisting of 3 parts:

- The first part collected socio-demographic and financial data such as sex, age, environment, marital and professional status, number of children, and monthly income).
- The second part contained self-rated items aimed at collecting information about health-related behaviors, the level of stress, and the quality of dental life (e.g., the presence of a chronic disease, the consumption of alcohol or tobacco, the dental hygiene routine, the consumption of pain drugs, and visits to the dentist. The patients were also required to self-rate certain questions targeting the level of pain or the satisfaction with their dental quality of life (e.g., *How do you rate your level of pain now, on a scale from 1-10,* where 1 represents "no pain")
- The third part of the questionnaire was completed by dentists, recording data about diagnostic, identified dental issues, and emergency interventions.

Statistical Analyses. All data analyses were performed using the *IBM Statistical Package for Social Sciences (SPSS) version 26* (SPSS Inc., Chicago, IL, USA). The descriptive statistics of socio-demographic and medical data were expressed as means and standard deviations (SD), frequencies, and percentages. Given that the distribution of data was normal, parametric tests were used. An independent T-test was performed for the comparative analysis among genders, and a One-Way ANOVA was performed for the comparative analysis among professional categories. Correlation analysis was performed using *Pearson* correlations. The level of statistical significance was set at $p < 0.05$.

Ethical Approval. The present study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethical Committee of the Emergency Clinical Hospital of Oradea, Romania, No. 14518.16.06.2021.

RESULTS

Sociodemographic and Medical Data

A total of 105 patients, aged 37.03 ± 14.45 (with a minimum of 18 and a maximum of 84 years old), agreed to fill in the questionnaire. The majority of the respondents were from urban areas and were female (52.4%). Almost three-quarters of them declared that they were employed, with half having a high-school level of education. Additionally, three-quarters of them stated that they were in a relationship, and most of them were parents (tab. I).

Oral health behaviors

The respondents were asked to answer some questions focusing on their oral health-related behaviors. The data analysis revealed that one-third of them consumed alcohol or cigarettes. Three-quarters stated that they used toothpaste and a brush for cleaning their teeth. Less than one-fifth reported using mouthwash, and none of the respondents used dental floss as a method for cleaning their teeth. Regarding their teeth-brushing routine, we identified that around one-third of them brushed their teeth in the morning or at night, with morning brushing being more common than evening brushing (tab. II).

The diagnostics were registered by the medical team, and all details are presented in table III.

TABLE I.
Sociodemographic Data

Sociodemographic and Medical Characteristics	n (%) M ± SD
Gender	
• male	50 (47.6)
• female	55 (52.4)
Age	37.03 ± 14.45
Area of origin	
• urban	64 (61.00)
• rural	41 (39.00)
Educational level	
• middle school	29 (27.6)
• high school	60 (57.1)
• university	16 (15.2)
Professional status	
• Student	8 (7.6)
• Employed	73 (69.5)
• Unemployed people	4 (3.8)
• Pensioner	10 (9.5)
• Social assistance recipient	10 (9.5)
Monthly income (1 EUR = 5 RON)	
• Under 500 (RON)	16 (15.2)
• Between 500 and 1,500 (RON)	23 (21.9)
• Between 1,500 and 3,000 (RON)	48 (45.7)
• Between 3,000 and 5,000 (RON)	16 (15.2)
• Between 5,000 and 7,000 (RON)	2 (1.9)
Marital status	
• Single	31 (29.5)
• In a relationship	74 (70.5)
Being a parent	
• Yes	69 (65.7)
Number of children	
• 1	22 (21.0)
• 2	34 (32.4)
• 3<	13 (12.5)

TABLE II.

Medical Data and Oral Health Routine

Medical data and oral health routine	n (%) // M (± SD)
Alcohol consumption	
• No	75 (71.4)
• Rarely	21 (20.0)
• Occasionally	9 (8.6)
Smoking	
• no	66 (62.9)
• I did, but I quit	7 (6.7)
• smoked rarely	12 (11.4)
• yes	20 (19.0)
Oral hygiene	
• only with water	7 (6.7)
• toothpaste and toothbrush	75 (71.4)
• mouthwash	19 (18.1)
• dental floss	0
• toothpicks	4 (3.8)
Do you brush your teeth in the morning?	
• never	0
• very rarely	6 (5.7)
• sometimes	21 (20.0)
• almost every morning	30 (28.6)
• every morning	48 (45.7)
Do you brush your teeth in the evening?	
• never	0
• very rarely	11 (10.5)
• sometimes	28 (26.7)
• almost every evening	32 (30.5)
• every evening	34 (32.4)
Going to the dentist	
• periodic inspection	19 (18.1)
• only when needed	80 (76.2)
• I have never been	6 (5.7)
Emergency dental office in the last 6 months	
• Yes	37 (35.2)
Number of emergency dental office visits	
• 0	60 (57.1)
• 1	23 (21.9)
• 2	14 (13.3)
• 3	5 (4.8)
• 4	2 (1.9)
• 5	1 (1.0)

Medical data and oral health routine	n (%) // M (± SD)
Dental consultation last month	
• yes	37 (35.2)
Level of dental pain (1 - *not at all* to 10 - *very much*)	M = 5.50 ± 2.88
Dental health satisfaction level (1- *Extremely dissatisfied* to 5 - E*xtremely satisfied)*	M = 2.97 ± 1.11
Level of stress in the last 6 months (1 - *not at all* to 5 - *very stressed*)	M = 2.75 ± 1.11
Chronic diseases	
• yes	8 (7.6)
Toothache medication last month	
• yes	61 (58.1)
Dental problems in childhood	
• never	14 (13.3)
• rarely	27 (25.7)
• sometimes	44 (41.9)
• often	14 (13.3)
• very often	6 (5.7)

TABLE III.

Orthodontic profile of participants

Orthodontic profile	n (%) M ± SD
Pulpitis	
• serous	33 (97.1)
• purulent	1 (1.0)
Periodontitis	
• yes	5 (4.8)
Dental abscess	
• yes	10 (9.5)
Gingivitis	
• yes	5 (4.8)
Other	
• oral thrush	1 (1.0)
• upper lip contusion	1 (1.0)
• coronary fracture	5 (4.9)
• fracture of a prosthetic restoration	1 (1.0)
• dentin hypersensitivity	1 (1.0)
• dental mobility	1 (1.0)
• acute apical periodontitis	37 (35.2)
• post-traumatic gingival injury	2 (1.9)
• root remnant	1 (1.0)
Oral hygiene	
• poor	39 (37.1)
• satisfying	54 (51.4)
• good	12 (11.4)
Dental caries	

Orthodontic profile	n (%) M ± SD
• simple	49 (47.1)
• complicated	55 (52.9)
Filling	
• compliant	39 (37.9)
• non-compliant	45 (43.7)
• none	19 (18.4)
Edentations	
• partially	61 (77.2)
• extended	18 (22.8)
Prosthetic restoration	
• compliant	20 (19.6)
• non-compliant	13 (12.7)
• none	69 (67.6)
Type of Prosthetic restoration	
• fixed	28 (84.8)
• Implant-supported	2 (6.1)
• removable/ mobilizable	3 (9.1)
Dental mobility	
• Grade I	66 (75.0)
• Grade II	13 (14.8)
• Grade III	9 (10.2)
Odontalgia	
• diffuse	18 (21.2)
• continuous	36 (42.4)
• pulsating	31 (36.5)
Periodontal pain	
• aching	18 (30.5)
• continuous	35 (59.3)
• stabbing	6 (10.2)
Gingival Bleeding	
• localized	36 (69.2)
• generalized	16 (30.8)
Tumefaction	
• localized	27 (87.1)
• diffuse	4 (12.9)
Mucosal lesions	
• yes	11 (10.8)
TMJ pain	
• aching	1 (33.3)
• continuous	2 (66.7)
• stabbing	0
Trismus	
• yes	1 (1.0)

There were significant differences in calling for dental consultation services between males and females, $t(103) = 2.336$, $p = 0.021$. Results proved that men had visited the dentist more often in the previous month (1.76 ± 0.43) compared with women (1.54 ± 0.50).

A statistically significant difference was observed in the examination of swellings between male and female patients, with women showing a higher mean number of swellings (1.22 ± 0.42) than men (1.00 ± 0.00), t(17) = -2.204, p = 0.042. An independent-sample T-test was performed to determine if there were differences in analgesic administration between patients with chronic diseases and healthy patients. Results showed that on average, patients who did not suffer from chronic diseases took more analgesics (1.44 ± 0.49) than patients suffering from chronic diseases (1.12 ± 0.35), t(9.47) = -2.360, p = 0.041.

Significant differences were observed in the examination of mucosal lesions between patients with and without chronic diseases $t(93) = 3.511$, $p = 0.001$, meaning that respondents with chronic diseases showed a higher mean number of mucosal lesions (2.00 ± 0.00) than healthy respondents (1.88 ± 0.32). Furthermore, results indicated that patients who suffered from chronic diseases were more frequently diagnosed with periodontitis (2.00 ± 0.00) than those who did not (1.94 ± 0.24), t(96) = 2.516, p = 0.014.

There were significant differences in examining swellings based on marital status, $t(23) = -2.145$, $p = 0.043$. Participants engaged in a relationship showed a higher mean number of swellings (1.17 ± 0.38) than single participants (1.00 ± 0.00). The statistical analysis of data indicated that single patients were more frequently diagnosed with periodontitis (2.00 ± 0.00) than patients who were engaged in a relationship (1.92 ± 0.27), t(73) = 2.538, p = 0.013.

A one-way ANOVA was conducted to determine if the diagnosis of dental fillings varied among groups with different levels of education. Participants were classified into four groups: *those with primary school education* ($n = 7$), *those with secondary school education* ($n = 13$), *those with high school education* ($n = 69$), and *those with higher education* ($n = 14$). The data are presented as mean ± standard deviation, and there was homogeneity of variances, as assessed by Levene's test of homogeneity of variances ($p = 0.771$). The diagnosis of fillings was statistically significantly different across education levels, $F(3, 99) = 6.837$, $p < 0.001$, showing an increase from higher education (1.43 ± 0.51) to high school (1.57 ± 0.60), to secondary school (1.92 ± 0.76), and finally to primary school (2.57 ± 0.78), in that order. Tukey post hoc analysis revealed that the increase from primary to secondary school education (1.006, 95% CI (0.36 to 1.66)), ($p = 0.001$) as well as the increase from primary school to higher education were statistically significant (1.143, 95% CI (0.38 to 1.90)), ($p = 0.001$), but no other group differences were statistically significant.

Another analysis using one-way ANOVA was conducted to determine if the number of children varied across different professional groups. The participants were classified into five groups: *students* ($n = 8$), *employees* ($n = 73$), *pensioners* ($n = 10$), *unemployed people* (n= 4) and *socially assisted people* ($n = 10$).

The results indicated that the number of children the patients had was statistically significantly different among different social categories, $F(4, 14.263) = 7.399$, $p = 0.002$. The mean number of children increased progressively from students (0.25 ± 0.46) to employees (1.29 ± 1.40), to pensioners (1.50 ± 0.97), to unemployed peo-

ple (1.50 ± 1.29), to socially assisted people (2.80 ± 2.15) groups. The Games-Howell post hoc analysis revealed that the increase in the number of children from students to employees was statistically significant (-1.03, 95% CI (-1.72 to -0.36)), (p = 0.001), the increase from students to pensioners was statistically significant (-1.25, 95% CI (-2.34 to -0.16)), (p = 0.022), and the increase from students to socially assisted people was statistically significant (-2.55, 95% CI (-4.85 to -0.25)), (p = 0.029), but no other group differences were identified. The diagnosis of fillings was statistically significant across various income levels, $F(4, 98) = 4.875$, $p < 0.001$. The rates increased from the income range of 5,000-7,000 RON (n=2)(1.00 ± 0.00), to the income range of 3,000-5,000 RON (n=15) (1.40 ± 0.50), to the income range of 1,500-3,000 RON (n = 48)(1.52 ± 0.65), to the income range of 500-1500 RON (n = 22)(1.82 ± 0.66), and finally to the under 500 RON income group (n = 16)(2.19 ± 0.65). Tukey post hoc analysis indicated that the increase from the under 500 RON group to the 1,500-3,000 RON income group (0.66, 95% CI (0.16 to 1.17)), (p = 0.004), as well as the increase from the under 500 RON group to the 3,000-5,000 RON income group were statistically significant (0.78, 95% CI (0.16 to 1.42)), (p = 0.007), while no other group differences were statistically significant.

A Pearson's correlation was conducted to assess the relationship between age and the degree of satisfaction regarding dental health. The results indicated a statistically significant negative correlation between these variables (r = -0.19, p = 0.04), suggesting that as participants aged, their satisfaction with dental health decreased. Additionally, age correlated positively with the diagnosis of gingivitis (r = 0.19, p = 0.04), in the sense that the incidence of gingivitis increases with age.

We identified that there were strong negative correlations between the level of education and the diagnosis of dental fillings (r = -0.38, p < 0.001), and respectively, between the income and the diagnosis of fillings (r = -0.39, p < 0.001). This indicated that higher levels of education and standards of living were associated with a lower frequency of this diagnosis. Additionally, the level of education correlated positively with income (r = 0.46, p < 0.001), in the sense that the higher the level of education, the higher the standard of living. The results proved negative correlations between the number of children and the number of packs of cigarettes consumed per day (r = -0.40, p = 0.008), as well as between the number of children and the prosthetic works that patients had (r = -0.37, p < 0.001). Thus, the more children the patients had, the less they smoked, and the fewer prosthetic works they had. The number of packs of cigarettes smoked per day correlated positively with dental pain (r = 0.35, p = 0.03), indicating that increased smoking leads to more pain. We identified a positive correlation between the pain felt by the patients and dental cavities (r = 0.224, p = 0.02), in the sense that more cavities result in higher pain levels. We identified a negative correlation between the frequency of visits to the dentist and periodontal pain (r = -0.26, p = 0.04), meaning that the more often patients visited the dentist, the less periodontal pain they experienced. Additionally, stress levels correlated negatively with dental pain (r = -0.35, p = 0.001), higher stress resulted in less dental pain. The results showed a strong positive correlation between the level of satisfaction regarding dental health and oral hygiene (r = 0.34, p < 0.001). Patients who took care of their teeth better were more satisfied with their dental

health. Additionally, dental health satisfaction correlated negatively with gingival bleeding ($r = -0.03$, $p = 0.029$), meaning that the more bleeding patients had, the less satisfied they were with their dental health.

DISCUSSION

Our results cover an important gap regarding the profile of patients in the emergency units in Oradea, detailing their sociodemographic characteristics and oral health-related behaviors. Most of the studies have also identified that women typically seek dental assistance in emergency units, indicating a delay in receiving dental care. However, few studies have shown that men are more likely to visit public emergency dental units. For example, Matsumoto *et al.* (2017) (9) analyzed the profile of Brazilian patients who accessed the public dental emergency units, finding that usually the patients were males, aged 30-52, with an elementary school level of education, with only one previous consultation in public dental units. Ottaviani *et al.* (2013) (10) found that male patients were more frequent beneficiaries of Italian public dental emergency services, while Verma and Chambers (2014) observed that in Australia, usually the patients were males younger than 30 years old (11). Our study found that nearly 75% of patients declared that they sought dental appointments only when necessary, while less than 20% had periodic checkups. These results are in congruency with literature, such as a study conducted by Schroeder *et al.* (2024) which indicates that lacking a regular dentist leads to higher emergency dental visits (12).

The results indicated negative correlations between the number of children and the number of packs of cigarettes consumed per day. Our study is in congruency with others identified in scientific literature. For example, Lippet (2021) (13) observed that parents, especially mothers, smoke less when having children, which improves children's oral health. Mahabee-Gittens *et al.* (2022) found that children aged 1-11 years old with less exposure to tobacco had fewer carries and less chronic difficulty with one or more oral health problems (14). Leroy *et al.* (2011) identified that previous exposure to tobacco was significantly associated with gingivitis in 5-year-old children (15). A recent meta-analysis showed a strong correlation between passive smoking and the increased prevalence of dental caries in children. Environmental tobacco smoke exposure and dental caries risk were influenced by factors such as low parental education, low socioeconomic status, poor dietary habits, low oral hygiene, and gender (Clemention *et al.*, 2025) (16).

We identified that approximately one-third of patients brushed their teeth either in the morning or at night, with morning brushing being more common than evening brushing. Teeth brushing is one of the most common behaviors that maintain oral health. Individuals from low socioeconomic (SES) backgrounds often brush less regularly (Raison *et al.*, 2021) (17). The study by Hwa-Young Lee *et al.* (2023) indicated that patients under the age of 30 years were more likely to brush after lunch, while those aged 40-79 were found to brush their teeth after dinner (18). Additionally, depending on the professional category, people engaged in services, as well as students, housewives, or unemployed people were less likely to brush their teeth after lunch compared to office workers.

Strengths and limitations of the study. The current research is important because it provides important statistical data about the environment of emergency dentistry, outlining a profile of the patients who access

public emergency medical services. These results are generalizable to the area population studied and useful for preventive campaigns. One limitation of the study is determined by the period in which the research took place, i.e., after the period of restrictions imposed by the COVID-19 pandemic, when access to dental interventions was carried out only for patients in critical dental situations and when routine checkups were avoided. It is very possible that the patients' oral health deteriorated because of these restrictions to accessing dental medical services and conventional treatment. This situation was very clearly presented by Sycinska-Dziarnowska and Paradowska-Stankiewicz (2020) (19) who, in their study, showed that during the period of restrictions imposed by the pandemic, the search for the word "toothache" had an increasing trend in all European countries and access to simple dental services was extremely limited (Nijakowski *et al.*, 2021) (20). Research conducted by Peloso *et al.* (2020) also identified that the level of anxiety among patients needing dentistry interventions was higher during pandemics (21). Patients undergoing dental treatment and orthodontics were more willing to attend appointments and were more concerned about an increase in treatment duration or expenses. The second limitation of the study is determined by the fact that the research was conducted in a single-center emergency unit, so the results should be interpreted in relationship with the socio-demographic and economic factors related to this geographic area. The third limitation of the study is caused by the number of socio-demographic factors that can force patients to access oral health services. An example would be the distance between their home and a dental clinic. A fourth limitation of the research is related to the lack of information about the profession or the level of health literacy (the latter being considered, implicitly, in this study, as being related to the patient's number of years of schooling). Finally, the medical condition-experiencing significant pain-could be also a limitation of the study, because maybe this category of patients chose not to answer the questionnaire because of their physical discomfort.

CONCLUSIONS

To prevent dental emergency problems and shape health policies in dentistry, it is essential to identify the profiles of patients seeking assistance in public dental emergency units. The results are valuable for health policymakers, as well as those responsible for health education, since health education and prevention play an important role in enhancing the quality of life in general. Given that the profile of the patients proves that most of the beneficiaries do not have more than a high-school level of instruction, it is essential to consider new strategies for delivering information through elementary school-level curricula.

REFERENCES

1. World Health Organization. Global oral health status report: towards universal health coverage for oral health by 2030. *World Health Organization* 2022.
2. Jain N, Dutt U, Radenkov I, Jain S. WHO's global oral health status report 2022: Actions, discussion and implementation. *Oral diseases* 2024; 30(2): 73-79.

3. Fisher J, Berman R, Buse K, *et al*. Achieving Oral Health for All through Public Health Approaches, Interprofessional, and Transdisciplinary Education. *NAM perspectives* 2023; 10: 31478.
4. Hakeberg M, Wide Boman U. Self-reported oral and general health in relation to socioeconomic position. *BMC Public Health* 2018; 18: 1-8.
5. Batista MJ, Lawrence HP, Sousa MD. Oral health literacy and oral health outcomes in an adult population in Brazil. *BMC Public Health* 2018; 18:1-9.
6. Baskaradoss JK. The association between oral health literacy and missed dental appointments. *The Journal of the American Dental Association* 2016; 147(11): 867-874.
7. Ueno M, Takeuchi S, Oshiro A, Kawaguchi Y. Relationship between oral health literacy and oral health behaviors and clinical status in Japanese adults. Journal of Dental Sciences 2013; 8: 170-176.
8. Lee JY, Divaris K, Baker AD, Rozier GR, Vann WF Jr. The relationship of oral health literacy and self-efficacy with oral health status and dental neglect. *Am J Public Health* 2012; 102(5): 923-929 / doi:10.2105/AJPH.2011.300291
9. Matsumoto MS, Gatti MA, de Conti MH, *et al*. Determinants of Demand in the Public Dental Emergency Service. *The Journal of Contemporary Dental Practice* 2017; 18(2): 156-161 / doi: 10.5005/jp-journals-10024-2008.
10. Ottaviani G, Costantinides F, Perinetti G, *et al*. Epidemiology and variables involved in dental abscess: survey of dental emergency unit in Trieste. *Oral Diseases* 2013; 20(5): 499-504.
11. Verma S, Chambers I. Dental emergencies presenting to a general hospital emergency department in Hobart, Australia. *Australian dental journal* 2014; 59(3): 329-333.
12. Schroeder S, Beck J, Medalen N, Stepanov A. Emergency Department and Dental Clinic Perceptions of Appropriate, and Preventable, Use of the ED for Non-Traumatic Dental Conditions in Hot-Spot Counties: A Mixed Methods Study. *Journal of Primary Care & Community Health* 2024; 15: 21501319231222396.
13. Lippert Z. *Assessing How Children Modify the Impact of Having Health Insurance on Smoking Status* Using the 2021 Behavioral Risk Factor Surveillance System Survey. Capstone Experience, 2023. https://digitalcommons.unmc.edu/coph_slce/306.
14. Mahabee-Gittens EM, Smith HA, Merianos AL. Disparities in dental health issues and oral health care visits in US children with tobacco smoke exposure. *The Journal of the American Dental Association* 2022; 153(4): 319-329.
15. Leroy R, Jara A, Martens L, Declerk D. Oral hygiene and gingival health in Flemish pre-school children. *Community Dent Health* 2011; 28: 75-81.
16. Clementino LC, Freire-Maia J, Pereira TS, *et al.* Passive smoking and early childhood caries: when adult addiction affects children's oral health. *Evid Based Dent* 2024; 25: 49-50 / doi:1038/s41432-024-00980-1.
17. Raison H, Corcoran R, Harris RV. Is toothbrushing behavior habitual? Cues, context, motivators and patient narratives. *Community dentistry and oral epidemiology* 2021; 49(5): 478-486.
18. Lee HY, *et al.* Factors predicting different times for brushing teeth during the day: multilevel analyses *BMC Oral Health* 2023; 23: 916 / doi: 10.1186/s12903-023-03555-1.
19. Sycinska-Dziarnowska M, Paradowska-Stankiewicz I. Dental Challenges and the Needs of the Population during the COVID-19 Pandemic Period. Real-Time Surveillance Using Google Trends. *Int. J. Environ Res Public Health* 2020; 17: 8999.
20. Nijakowski K, Cieślik K, Łaganowski K, Gruszczyński D, Surdacka A. The Impact of the COVID-19 Pandemic on the Spectrum of Performed Dental Procedures. *Int J Environ Res Public Health* 2021; 18: 3421 / doi: 10.3390/ijerph18073421.
21. Peloso RM, Pini NIP, Sundfeld Neto D, *et al*. How does the quarantine result from COVID-19 impact dental appointments and patient anxiety levels? *Brazilian oral research* 2020; 34: e84.