

PREVENTIVE NORMS OF DENTAL DISEASES IN LAW ENFORCEMENT OFFICERS

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Abstract: Prevention of dental disease is one of the most important directions in modern medicine, yet the preventive behaviors and hygienic status of occupational groups such as law enforcement officers remain insufficiently described. This study aimed to identify and assess the prevalence of dental diseases and preventive (hygienic) norms among law enforcement officers using clinical-dental and statistical methods. Subjective and objective examinations were carried out among 112 personnel aged 18–44 applying for treatment at the dental polyclinic of the Ministry of Internal Affairs, with statistical analysis extended to 122 patients (32 men aged 18–30, 56 men aged 31–44, 13 women aged 18–30, and 21 women aged 31–44). All patients (100% of cases) exhibited clinical-symptomatic complaints characteristic of gingivitis, and the KPO caries index averaged 17.94 ± 0.23 . Unsatisfactory oral hygiene was found in 67.7% of officers examined. Assessment of hygiene behavior revealed that most patients used horizontal or top-down brushing movements, only 4 patients (3.27%) brushed their teeth consistently, none demonstrated the vibratory motions characteristic of the Bass technique, and dental floss was frequently abandoned after causing gingival bleeding due to incorrect technique. These findings indicate a substantial gap between recommended preventive norms and actual hygiene practice in this occupational population, underscoring the need for structured oral hygiene education and targeted preventive dental programs to reduce the burden of gingivitis and its progression to periodontitis.

Keywords: Preventive Dentistry, Oral Hygiene, Gingivitis, KPO Index, Toothbrushing Technique, Law Enforcement Officers

Introduction

Dentistry is one of the specialized services whose main purpose is to address the diagnosis, prevention, and treatment of diseases of the oral cavity. Oral diseases are characterized by wide distribution, a broad range of clinical manifestations, and frequent combination with other diseases of the body, making the problem a common medical and social concern. Pathological processes in the tissues of the oral cavity can become foci of chronic infection and, through disruption of gingival function, contribute to deterioration in the functioning of internal organs and exacerbation of chronic disease. According to the World Health Organization, oral diseases are among the most common conditions worldwide, and most are preventable [1].

Prevention of dental disease occupies an important place in the global health system and is increasingly considered a system aimed not only at treatment but also at averting disease onset. The main areas of prevention include improving oral hygiene, regular tooth cleaning, fluoride use, and periodic dental examination, all of which reduce bacterial microflora and the risk of developing disease. According to modern scientific views, dental disease is closely related to general health, with periodontal inflammation associated with systemic conditions such as diabetes mellitus [2] as well as broader metabolic and cardiovascular disturbances [3]; prevention is therefore not limited to the oral cavity but also involves improving overall health, proper nutrition, and avoidance of harmful habits.

Economic evidence consistently indicates that preventing dental disease is more cost-effective than treating it, with preventive interventions for caries and periodontitis generally yielding favorable cost-effectiveness and cost-benefit profiles compared with restorative and surgical care [4]. Strengthening the preventive approach within the health system is therefore an urgent priority, particularly for occupational groups subject to chronic psychological and physical stress, such as law enforcement personnel, who have been shown to exhibit poorer periodontal status than the general population [5]. Maintaining the health of law enforcement officers, bringing their health indicators to the levels of developed countries, assessing oral-cavity condition in a manner consistent with international standards of quality and effectiveness, and improving complex dental care are therefore current priorities.

The purpose of this study was to identify and assess the prevalence of dental diseases and the preventive (hygienic) norms practiced by law enforcement officers, using clinical-dental and statistical methods to characterize both disease prevalence and the gap between recommended preventive behavior and actual hygiene practice.

Materials and Method

A. Study Population

As the object of the study, 112 patients aged 18–44 years who applied for treatment at the dental polyclinic of the Ministry of Internal Affairs were received, and subjective and objective examinations were carried out among this group. Statistical analysis was subsequently carried out with the participation of 122 patients; gender-related distribution in disease spread was examined, with 32 men aged 18–30, 56 men aged 31–44, 13 women aged 18–30, and 21 women aged 31–44, consistent with reported sex-related differences in periodontal disease susceptibility and severity [6].

B. Subjective Examination

During interrogation, attention was paid to taste disorders, dry mouth, unpleasant taste in the mouth, and salivary detachment, and complaints regarding the oral mucosa, teeth, and jaws were identified. Within the framework of subjective examination methods, the main complaints of participants, attitude toward oral hygiene, dental-cleaning habits, periodicity of application to the dental service, anamnesis of previous dental disease, participation in preventive activities, and general-purpose anamnesis (data on diseases experienced during life and chronic diseases) were identified. These data were collected through individual interviews and a specially developed medical-social questionnaire; anamnestic data were considered important for interpreting clinical outcomes and identifying factors affecting the formation of dental disease.

C. Objective and Clinical-Functional Examination

Objective and clinical-functional examinations were carried out by the dentist using a dental mirror, a dental probe, and a periodontal probe, under conditions of natural and artificial lighting. During examination of the teeth, attention was paid to color, staining, the presence of cracked or broken teeth, increased or decreased sensitivity, and tremor. Examination of the oral organs and tissues proceeded in sequence through the tooth and tooth row, bite, parodont status, and the presence and condition of dental fillings and prostheses. A complex assessment was made of dental hard-tissue condition, caries and its complications (pulpitis, periodontitis), the presence of fillings and missing teeth, the clinical condition of parodont tissue, signs of gingival inflammation, and changes in the oral mucosa (color, moisture, swelling, pain, tooth imprints, pathological elements). The definition of a dental diagnosis was based on dental examination, assessment of the hard-tissue and hygienic condition of the oral cavity and parodont tissue, and orthopantomography (dental X-ray imaging) when necessary. All

pathological findings were recorded in the outpatient card and re-assessed longitudinally at primary examination, during treatment, and post-treatment.

D. Indices

When assessing the condition of dental hard tissues, the intensity of dental caries was calculated according to the KPO index (decayed-missing-filled teeth) in accordance with WHO methodology for oral health surveys [7]. Several complementary indices and tests were applied for comprehensive assessment of parodont-tissue condition, with gingival and plaque findings recorded following standardized criteria [8]. Preventive counseling regarding fluoride use was informed by established evidence on the caries-preventive efficacy of fluoride-containing oral hygiene products [9].

E. Statistical Analysis

Research materials were subjected to statistical processing using parametric and non-parametric analysis methods. Initial data collection, correction, systematization, and visualization were carried out in Microsoft Office Excel 2016; statistical analysis was implemented using IBM SPSS Statistics v.26.

Results

A. Demographic Distribution

Of the patients examined, 32 were men aged 18–30, 56 were men aged 31–44, 13 were women aged 18–30, and 21 were women aged 31–44, indicating a predominance of men, particularly within the 31–44 age group.

B. Clinical and Anamnestic Findings

Clinical-anamnestic surveys identified complaints associated with changes in parodont tissue. Tooth pain was reported by 5.74% of patients ($n=7$), and tooth sensitivity by 12.29% ($n=15$). Odor (halitosis) was noted in 6.56% ($n=8$) of patients; many had become so accustomed to the odor that they no longer perceived it themselves, and none associated it with unsatisfactory oral hygiene, instead attributing it to a possible sign of gastritis. A sensation of aching and itching in the gums was reported by 36.88% of patients ($n=45$), and oral dryness by 9.84% ($n=12$).

Food impaction between teeth was reported by 25.41% of patients ($n=31$), tooth mobility by 1.64% ($n=2$), and gum bleeding by 31.15% ($n=38$). Inefficient chewing occurred in 3.28% ($n=4$) of patients, and complaints regarding dental-row condition and aesthetic defects were reported by 9.84% ($n=12$). Overall, all patients (100% of cases) exhibited clinical-symptomatic complaints characteristic of gingivitis. While no clear differences in the prevalence of dental disease were identified between patients, differences in severity were significant, with inflammatory parodont disease present in 100% of cases.

C. Hygiene Behavior and Preventive Practices

As hygiene products for the oral cavity, patients reported using toothbrushes and toothpaste, with most having previously used hard or medium-hardness toothbrushes for extended periods. Patients reported abandoning hygiene products such as dental floss following episodes of gum bleeding encountered when attempting to use them; none of the patients was able to demonstrate correct flossing technique, and improper use was identified as injuring the gingival margin and increasing inflammation rather than controlling it.

During interviews about basic dental-cleaning technique, most patients were found to perform horizontal as well as top-down brushing movements. Only 4 patients (3.27%) reported brushing their teeth consistently, with the remainder brushing only intermittently. When patients were shown the vibratory (Bass-technique) movement, none was able to perform motions corresponding to this technique. Unsatisfactory hygiene was found in 67.7% of the law enforcement officers examined. The need for qualified oral hygiene and comprehensive dental care was assessed as the main criterion for

involvement in the study, and it was established that not a single patient had previously received a full course of treatment directed at diseases of the hard tissues of the teeth, parodont, or oral mucosa.

D. Caries Index

The KPO index, characterizing the high incidence of caries and its complications, was set at 17.94 ± 0.23 . Of its components, the “O” (missing/removed teeth) indicator averaged 5.21 ± 0.12 , teeth affected by active caries averaged 3.32 ± 0.07 , and the “P” (filled) indicator averaged 9.41 ± 0.17 teeth.

Discussion

The findings of this study reveal a substantial gap between recommended preventive norms and the actual hygiene practices of law enforcement officers. Although all patients (100%) presented clinical-symptomatic complaints characteristic of gingivitis, unsatisfactory hygiene was found in 67.7% of cases, and no patient demonstrated the vibratory brushing motion associated with the Bass technique. Evidence from systematic reviews and network meta-analyses of manual toothbrushing techniques indicates that technique-specific approaches, including the Bass and modified Bass methods, can achieve greater reductions in plaque and gingival bleeding than uninstructed brushing, although the long-term superiority of any single technique over others remains inconclusive [10]. This suggests that structured instruction in a specific, evidence-informed brushing technique — rather than reliance on unguided horizontal or top-down movements — could meaningfully improve hygiene outcomes in this population.

The finding that patients abandoned dental floss after experiencing gum bleeding from incorrect use is consistent with evidence that interdental cleaning devices, including floss, can reduce gingivitis when used correctly as an adjunct to toothbrushing, but that improper technique diminishes their benefit and can cause tissue trauma [11]. This underscores that simply recommending floss use is insufficient without accompanying technique instruction and follow-up reinforcement, particularly in a population where no patient demonstrated correct usage.

The consistently high prevalence of gingival symptoms, combined with a KPO index of 17.94 ± 0.23 reflecting substantial caries burden, supports the case for a stepwise, structured approach to periodontal prevention and care, consistent with contemporary clinical practice guidelines that emphasize behavioral change, professional biofilm control, and supportive maintenance as sequential steps of therapy [12]. Because gingivitis represents a well-defined, site-specific inflammatory condition of the periodontium that can progress to more destructive periodontitis if untreated [13], the results reported here — aching and itching in the gums in 36.88% of patients and gum bleeding in 31.15% — identify a population at meaningful risk of disease progression in the absence of intervention. Standardized diagnostic and classification frameworks for periodontal disease may further support systematic monitoring of this progression across future preventive and clinical research in this occupational group [14].

Taken together, these findings suggest that preventive dental programs for law enforcement officers should combine individualized brushing-technique instruction, supervised introduction of interdental cleaning aids, and periodic professional monitoring, rather than relying on generic hygiene advice alone. Given the occupational stress and irregular routines characteristic of law enforcement service, embedding such preventive measures within routine occupational health screening may be particularly effective for this population.

This study has limitations, including its cross-sectional design, reliance on self-reported hygiene habits alongside clinical observation, and the absence of a comparison group drawn from the general population. Future research should evaluate the effect of structured brushing-technique and interdental-cleaning education interventions on clinical outcomes in this occupational group over time, potentially

complemented by emerging salivary and microbiome-based diagnostic tools capable of detecting early dysbiotic shifts before overt clinical signs of gingivitis appear [15].

Conclusion

This study demonstrates that inadequate preventive hygiene practices — including the absence of correct brushing technique, inconsistent brushing frequency, and abandonment of interdental cleaning aids after improper use — are widespread among law enforcement officers and are closely associated with a high prevalence of catarrhal gingivitis. The presence of a complaint of aching and itching in the gums was found in 36.88% of patients, and bleeding from the gums in 31.15% of patients, together with a KPO index of 17.94 ± 0.23 reflecting substantial caries burden. Based on these findings, there is a clear need for complex, structured preventive intervention addressing inflammation in the gum tissue of the officers examined. If gingival inflammation is not addressed through timely, technique-focused preventive care, it may spread to other parodont tissues, resulting in periodontitis; strengthening preventive norms and hygiene education within this occupational group is therefore essential to reducing this risk.

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