

## DENTAL ASSISTANCE TO MILITARY PERSONNEL OF THE ARMED FORCES OF UKRAINE

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**Background.** *At present, the formation of military units of the Armed Forces of Ukraine during mobilization takes place with underlying high dental morbidity of the population of the country.*

**Objective.** *The aim of this research was to study dental health of the personnel of military units and the problem of providing dental care to military personnel according to the analysis of modern scientific literature.*

**Methods.** *The following research methods were used to analyse dental care for military personnel, namely: bibliographic, analytical, systems approach.*

**Results.** *Hygiene of the oral cavity is mandatory in military units and should be routinely carried out. It was found that the main reason for seeking dental care among military personnel was treatment of major dental diseases. A low number of military personnel seeking for dental preventive examination was noted that proved a low level of primary prevention among this category of people.*

**Conclusions.** *Therefore, the obtained data on the state of dental health of military personnel require a purposeful approach to organization of prophylaxis and prevention of complications through professional hygiene and early prosthetics.*

**KEYWORDS:** *military personnel; dental diseases; prevention; professional hygiene of the oral cavity.*

### Introduction

The current socio-political situation is characterized by a large number of local military conflicts in many countries, including Ukraine. It is true that military conflicts lead to mass disability and death of people, including military personnel performing their duty at the territories of combat operations [1].

A large number of publications in the military medical literature aimed at improving organization of dental care due to specific living conditions and combat effectiveness of military personnel of the Armed Forces of Ukraine, the peculiarities of the military profession, as well as factors influencing the course of pathological processes of the dentoalveolar apparatus, methods of their prevention and treatment [2].

At present, formation of military units of the Armed Forces of Ukraine during mobilization takes place with a high dental morbidity of the population in the country [3, 4].

After special missions, military personnel often complain of a sharp deterioration in dental health, which is associated with the inability

to receive qualified assistance at the place of temporary deployment of the unit. As a rule, this is due to the lack of dentist or appropriate materials and equipment, the difficulty of transporting a serviceman to the place of timely, sometimes emergency dental care [5].

The level of dental health of organized military contingents depends on the motivation of the personnel, social and hygienic factors, which include ecological situation in the region, as well as on the development of dental services, principles of organization of medical care, and prevalence of dental diseases [4, 6].

Military service and combat missions by personnel is invariably accompanied by high emotional and psychological stress, various kinds of disorders in their health, including dental health.

Therefore, the measures for prevention of dental diseases before military missions is very important. Unfortunately, organization of dental care is insufficient.

Therefore, the objective of the research was to study the level of dental health of the personnel of military units and the problems of providing dental care to military personnel according to the analysis of modern scientific literature.

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### Review

A large number of publications in the military medical literature are aimed at improving the organization of the dental care system. This is due to the specific living conditions and combat effectiveness of the military personnel of the Armed Forces of Ukraine, due to the peculiarities of the military profession, as well as factors influencing the course of pathological processes of the dentoalveolar apparatus, requiring methods of prevention and treatment. Diseases of the teeth and their complications reduce the working and combat efficiency of military personnel, so the provision of dental care to this category is a problematic issue [7].

Naumenko K.E., Belikov O.B. (2018) after examining military personnel for dental morbidity, it was found that the prevalence of caries among conscripts was 100%, and among contract soldiers – 93.41%. When assessing the indicators of the need for military personnel in various types of outpatient dental care based on the analysis of the structure of the KPU indices, the authors found that 32.83% of the conscripts needed caries treatment, 16.41% – its complications, 17.91% – tooth removal. The amount of already filled teeth was about 22.38%, and removed – 10.44%. Among the contract servicemen, 23.10% had teeth with caries, 39.29% – filled, 16.78% – removed. There is also a tendency that the need for treatment increases with age due to the number of removed teeth [8].

Authors analysed the dental morbidity rate among military personnel of various branches of the Chernivtsi garrison based on the analysis of medical reports and outpatient journals. Among the nosological units of dental morbidity in 35.20% of cases uncomplicated caries was found, in 44.89% – its complicated forms, in 13.26% – periodontal disease, 5.35% – deformities and occlusion anomalies, and only 1.27% were inflammatory diseases of the oral mucosa. 63.25% of servicemen needed therapeutic treatment, 19.77% – surgical, 15.42% – orthopaedic and 1.56% – orthodontic care [2, 8].

Among the military personnel who need therapeutic treatment, acute forms of periodontitis were the most often in 39.11%, acute and chronic medium caries – 35.08%, acute forms of pulpitis – 25.80%. Among periodontal diseases, periodontitis of the first degree prevailed – 42.30% and the second degree – 36.53%, catarrhal gingivitis – 21.15% [9, 10].

According to the researchers, the prevalence of dentoalveolar anomalies among pre-cons-

cripts is 63.3%. At the same time, almost 2% of these young people have absolute restrictions on military service. In addition, defects in the dentition is revealed in 22.6% of people aged 18-22 years, who study in military schools in Kiev [9].

According to the results of dental examinations of conscript cadets aged 18-22, it was found that of the total number of conscripts routinely surveyed, 52.4% needed dental care, and in the western region of our country this number was 80-85%. The authors associate this first of all with the extremely low level of dental care just before the conscription of this category of the population in medical and preventive institutions of the Ministry of Health of Ukraine [9, 10].

The above materials indicate a fairly high level of dental morbidity among the military personnel of Ukraine, an extremely low level of dental care for this category of the population.

The authors also found that the increase in the need for orthopaedic treatment depended on the age of the military personnel. The category of 19-24 years old required the restoration or manufacture of artificial crowns, the category of 25-30 and 30-35 years old – crowns and bridges, and 35 years old and older – bridges and partial removable structures [9].

Lyshchyshyn M.Z. and co-authors (2020) after examining military personnel for periodontal tissue diseases, found that among conscripts, gingivitis was revealed in 23.33%, and periodontitis – in 13.33%. In soldiers of the contract form of service, on average, 32.76% of the surveyed had periodontitis and 34.76% – gingivitis. At the same time, the worst indicators were in the age groups of 19-24, 30-35 and 35 years old and older [10, 11].

Rachinsky S.V. and co-authors analysing oral hygiene among both conscripts and contract soldiers found out that the level of hygiene was “satisfactory” and “unsatisfactory”, and only in some categories of servicemen 11.50% it was “good”. This indicates on a lack of sanitary and educational work [12].

The main tasks of the dental service of the Armed Forces of Ukraine are to provide certain medical assistance to the military for each level, dental care to the wounded and sick (dental care) and medical rehabilitation of combatants [13].

Thanks to the signed Memorandum of Cooperation between the Military Medical Department of the Ministry of Defence and the Association of Dentists of Ukraine, dental

offices have been established at all training grounds and centres [13, 14].

Most of the military returning from the zone of hostilities in the Eastern Ukraine need medical rehabilitation, including modern dental care and dental prosthetics. Garrison dentists are important for dental assistance to the military.

Badiuk M.I. (2020), analysing the organization of dental care for soldiers of the Armed Forces of Ukraine, established an increase in the number of maxillofacial wounded in the overall sanitary losses. The authors emphasize the importance of restoring mobile dental offices to improve the level of dental care for soldiers [16, 17].

Mobile dental office (MDO) is a unit of the medical service designed to provide outpatient dental care to the personnel of units and subdivisions that do not have regular dental offices [14].

The mobile dental office is used to provide dental care in the field and outside of military garrisons - during the conduct of hostilities, conducting exercises, field training sessions, and eliminating the consequences of emergencies [18].

Mobile dental office is part of the clinics of maxillofacial surgery and dentistry of military medical clinical centres of the regions, the Central Dental Clinic of the Ministry of Defence of Ukraine and the Ukrainian Military Medical Academy (as an education unit) [14, 18].

The mobile dental office is deployed in a special modular unit based on a truck. The design and complete set of the mobile dental office gives the chance to provide out-patient dental services autonomously, in full and in comfortable conditions [14, 19].

The dental care to the personnel of the military unit is provided by a dentist of the medical centre, who is subordinate to the Head of the Medical Centre, and on special issues - to the garrison dentist and follows their instructions. The duties of a dentist of a military unit are to provide outpatient dental care to the personnel of the unit as well as first aid for injuries of the maxillofacial area and to ensure timely hospitalization and treatment of dental patients [20].

In a separate medical battalion (OMedB) the unit has a dental office, which includes a dentist (the head of the dental office OmedB) and a nurse.

In the context of reforming of the medical system, still there are a number of issues on

organization of therapeutic and prophylactic dental services in the Armed Forces of Ukraine.

Belikov A. (2017) analysed the level of dental care for servicemen according to the survey data. The author claims that the main reason for seeking dental care among the respondents was the treatment of major dental diseases. A low percentage of military personnel who consulted a dentist for a preventive examination was recorded that proved a low level of primary prevention among this category of population [19].

Dentists of medical companies provide dental care to subordinate personnel only as emergency care (removal, disclosure of subperiosteal abscesses, disclosure of root canals, etc.), as complete equipment is not used. Therefore, in the field dental care is provided sporadically and as an emergency care for acute cases (acute pulpitis, exacerbation of periodontitis, and trauma). It has been established that dentists of medical brigades perform their duties, mainly in the field and outside of their permanent locations. It has been proved that the main burden of providing dental care to military personnel in the combat zone is borne by the dental offices of military mobile hospitals. Since 2014, the work of regular mobile dental offices has been resumed. At the same time, the office is constantly changing its location and provides dental care directly at the locations of various departments. Analysis of the work of this cabinet shows high efficiency of its use in various military units [21].

Dental care for maxillofacial wounded is provided within the general structure of medical and evacuation measures of the medical services of the Armed Forces of Ukraine, including by regular dentists. Specialized treatment of such wounded is carried out in specialized clinics of maxillofacial surgery, dentistry of military medical clinical centres and dental departments of hospitals.

The dental care to military personnel is carried out with a very high dental morbidity among the personnel of the units.

Therefore, the full-time dentists of the brigades face a significant burden as they often treat servicemen in difficult field conditions during hostilities. Most of this assistance is provided in the form of emergency dental care. The main burden of providing dental care is assigned to the dental service of the military mobile hospitals [20].

Mobile dental offices were introduced into these hospitals, which made it possible to

significantly improve the quality of dental care for military personnel and bring it closer to the deployment sites of military units.

Today, a new model of providing dental care to military personnel has been developed and is successfully functioning in Ukraine, represented by a network of stationary and mobile offices. Depending on the peculiarities of the functioning, provision and volume of care for the wounded and dental patients, the specified model provides for division of the involved dental offices into 3 types by "categories". In the dental departments of military hospitals and specialized clinics of military medical clinical centres, dental care for military personnel is provided in full, including orthopaedic care [14, 21].

Some scientists compared the level of dental care in the units of the Armed Forces of Ukraine and NATO countries.

The health protection measures for the military personnel of NATO countries are an integral element in the system of combat readiness of troops. Document AJP-3.14 "Allied joint doctrine for force protection" defines health care as a very important part of their protection [22].

NATO National Military and Allied Commands emphasize the importance of ensuring an adequate level of medical, dental and mental health for troops. The experience of the alliance countries asserts that the presence of dental diseases reduces the combat readiness of troops. Routine dental examinations and standardized treatment programs ensure that personnel remain healthy during troop deployments in the war zone [15].

According to the STANAG 2466 standard "Dental Fitness Standards for Military Personnel and a Dental Fitness Classification System", which regulates monitoring of dental health of military personnel even before the deployment of medical units in the combat zone, NATO has introduced a system of comprehensive prevention of dental morbidity among military personnel [16].

The routine of planned dental examinations, preventive measures and unified standardized treatment programs minimizes the incidence of acute forms of oral diseases in military personnel within the combat zone.

Therefore, for improvement of dental care for servicemen of the Armed Forces of Ukraine, this should be taken into account and brought in line with the requirements of NATO standards.

Implementation of NATO standards facilitates improvement of the level of dental care

for military personnel, which is one of the key state tasks in improvement of defence of Ukraine.

Significant attention is paid to dental care as a component of medical support for troops in the armies of the NATO countries.

That is why following the Euro-Atlantic standards by military dentistry in Ukraine is a serious tool for further improvement of dental care for military personnel.

Among all the medical standards of the Euro-Atlantic alliance, there are three that should be singled out, they directly relate to the dental care of military personnel. All standards provide for the use of forces and means in the zone of hostilities.

The first is preventive, or STANAG 2466 "Dental Fitness Standards for Military Personnel and a Dental Fitness Classification System" [23]. It has been established that the armies of the NATO countries have introduced a system of comprehensive prevention of dental morbidity among military personnel. The system of planned dental examinations, preventive measures and unified standardized treatment programs excludes the entry of military personnel with acute forms of dental diseases into the zone of hostilities. This standard contains a unified classification of the dental health of military personnel, provides 4 groups or classes [10, 23].

Analysing the situation, it should be noted that, unfortunately, in Ukraine, dental prevention programs have been curtailed both at the state level and in the Ukrainian Armed Forces.

There is a clear tendency towards an increase in dental morbidity among military personnel in a special period, which indicates the low quality of the military medical examination.

The second STANAG 2453 AMedP-35 "The Extent of Dental And Maxillofacial Treatment at Role 1-3" [24] defines the staffing, logistics and volume of medical care for servicemen with dental diseases and injuries of the maxillofacial area at three levels, deployed in the area of military action.

The third dental standard – STANAG 2464 AMedP-3.1 "Military Forensic Dental Identification" [25] provides for participation of the dentist in the forensic medical examinations and is based on modern international protocols and procedures for identifying people by examining the remains of the oral cavity.

In Ukraine, in order to meet the requirements of this standard, it is necessary to introduce

legislative changes for the possible admission of military dentists to the process of forensic medical examination in the combat zone. To create a single electronic database of orthopantomograms for all military personnel, it is necessary to provide all hospitals with modern digital dental X-ray equipment. This will ensure not only implementation of the direct use of STANAG 2464 A MedP-3.1, but also significantly increase the clinical and diagnostic capabilities of military dental units in Ukraine [10].

### Conclusions

Diseases of the teeth and oral cavity negatively affect the combat effectiveness of military personnel and worsen the course of existing concomitant diseases. Therefore, professional hygiene of the oral cavity is mandatory in military units and should be routinely carried out. It is established that the professional hygiene of the oral cavity depends on the precise organization of dental care in military units. It should be noted that the domestic military dentistry requires further improvement.

The increase in the number of military personnel with requests for dental care is associated with a decrease in the number of preventive examinations, a decrease in the number of sanitized people and an increase in

those who need dental hygiene. This proves insufficient medical care for this category of the population. Thus, the attained data on the state of dental health of military personnel require a purposeful approach to the organization of prophylaxis, prevention of complications through professional hygiene and early prosthetics.

Therefore, new approaches to organizing and ensuring the provision of dental care to military personnel taking into account NATO standards should be developed in Ukraine. This ensures a high level of dental care for this category of population.

### Conflict of Interests

Authors declare no conflict of interest.

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### Authors Contributions

*Oksana Ya. Lavrin* – writing – original draft, writing – reviewing and editing; *Oleksandr V. Avdeev* – writing – reviewing and editing; *Nina Ye. Romanjuk* – data collection, investigation, formal analysis; *Oleksandr A. Bedenyuk* – conceptualization, methodology, formal analysis.

## ОСОБЛИВОСТІ НАДАННЯ СТОМАТОЛОГІЧНОЇ ДОПОМОГИ ВІЙСЬКОВОСЛУЖБОВЦЯМ ЗБРОЙНИХ СИЛ УКРАЇНИ

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*ТЕРНОПІЛЬСЬКИЙ НАЦІОНАЛЬНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ ІМЕНІ І.Я. ГОРБАЧЕВСЬКОГО МОЗ УКРАЇНИ,  
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**Вступ.** *В умовах сьогодення формування бойових підрозділів Збройних Сил України під час мобілізації відбувається на тлі високої стоматологічної захворюваності населення держави.*

**Мета роботи** *вивчення рівня стоматологічного здоров'я особового складу військових підрозділів та проблеми надання стоматологічної допомоги військовослужбовцям згідно аналізу сучасної наукової літератури.*

**Методи.** *Для аналізу стану стоматологічної допомоги військовослужбовцям використано такі методи дослідження, а саме: бібліографічний, аналітичний, системний підхід.*

**Результати.** *Санация порожнини рота є обов'язковою у військових частинах та повинна проводитися в плановому порядку. Встановлено, що основною причиною звернень за стоматологічною допомогою серед військовослужбовців було лікування основних стоматологічних захворювань. Відмічено низький відсоток військовослужбовців, які звернулися до стоматолога з метою профілактичного огляду, що свідчить про низький рівень первинної профілактики серед вказаної категорії осіб.*

**Висновок.** *Отже, отримані дані щодо стану стоматологічного здоров'я військовослужбовців потребують цілеспрямованого підходу до організації профілактики, попередження ускладнень шляхом санації і раннього протезування.*

**КЛЮЧОВІ СЛОВА:** *військовослужбовці; стоматологічні захворювання; профілактика; санация ротової порожнини.*

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### References

- Rachinsky SV, Schneider SA, Labunets OV, Dieva TV, Labunets VA, Nomerovskaya EE. Justification of the need for a differentiated approach in the organization and planning of dental orthopedic care for people of military age in Ukraine. *Colloquium-journal* 2021;4(91):11-5/. [In Ukrainian].
- Naumenko KY, Belikov OB. The prevalence of major dental diseases and the need of the military in orthopedic treatment (review of literature). *BMH Journal* 2017;1(81):211-14. [In Ukrainian].
- Hasiuk P, Hasiuk N, Kindiy D, Ivanchyshyn V, Kalashnikov D, Zubchenko S. Characteristics of cellular composition of periodontal pockets. *Interventional Medicine and Applied Science* 2016;8(4):172-7.
- Kalashnikov DV, Hasiuk PA, Vorobets AB, Rosolovska SO, Kindiy DD, Hrad AO, et al. Features of the course of enamel biomineralization processes in various anatomical areas of the tooth. *Wiadomosci lekarskie* 2020;73(5):864-7.
- Rachinsky SV, Schneider SA, Labunets OV, Diieva TV, Labunets VA, Diieva OE. The prevalence and intensity of development of dental orthopedic morbidity among men of military age in the south of Ukraine. *Innovation in stomatology* 2019;1:50-4. [In Ukrainian].
- Rachinskij SV, Shnajder SA, Labunec VA, Labunec OV, Dieva TV. Morbidity and condition of dental orthopedic care in pre-conscripts and military personnel of Ukraine (Literature review). *Stomatological Bulletin* 2019;4(109):57-61. [In Ukrainian].
- Bilyy VYa, Badyuk MI, Verba AV, Zarutsky YaL, Kazmirchuk AP, Savitsky VL, et al. A look at the system of medical support of the defense forces of Ukraine. *Military medicine of Ukraine* 2019;3(19):5-14. [In Ukrainian].
- Naumenko K, Belikov A. The Characteristic of the dental diseases in the military personnel of the Chernivtsi boundary group. *Ukrainian journal of medicine, biology and sport* 2018;1(18):201-6. [In Ukrainian].
- Rachinskij SV, Shnajder SA, Labunec OV, Dijeva TV, Labunec VA. The need and provision of young people of military age in dental orthopedic care. *Visnyk stomatologii* 2020;2(36):59-63. [In Ukrainian].
- Lyshchyshyn MZ, Kovalenko VV. Status and prospects of development of military dentistry in Ukraine. *Medicni perspective* 2020;25(1):9-17. [In Ukrainian].
- Lyshchyshyn M, Pavlovskiy L. Central dental clinic of the ministry of defense of ukrainian in the historical retrospective review. *Militari Historical Bulletin* 2020;1(35):131-44. [In Ukrainian].
- Rachinsky SV, Schneider SA, Labunets OV, Dieva TV, Labunets VA. The forecast of the prevalence and intensity of the development of dental orthopedic morbidity in people of military age in the western region of Ukraine. *Stomatological Bulletin* 2020;3(112):65-9. [In Ukrainian].
- Chernov D. Assessment of the health status of conscripts. *Health and ecology issues* 2021;18(1):5-13. [In Ukrainian].
- Nidzelsky MYa, Pisarenko OA, Tsvetkova NV. Organization of dental orthopedic care in military units. *Poltava: Gontar OV*; 2019. 108 p. [In Ukrainian].
- Kovalenko VV, Lyshchyshyn MZ. Euro-atlantic prospects of ukrainian dentistry. *Novini stomatologii* 2017;2(91):24-7. [In Ukrainian].
- Badiuk MI, Kovalenko VV, Solyaryk TV, Yarosh TV. Improvement of dental care for military servicemen of the armed forces of ukraine in accordance with NATO standards. *Ukrainian journal of military medicine* 2020;3(1):36-44. [In Ukrainian].
- Badiuk MI, Mykyta OO, Shvets AV, Sereda IK, Kovyda DV, Hubar AM. Analysis of the work of the medical service on the priority areas of development and implementation of standards of medical support of the Armed Forces of Ukraine for a special period. *Military Health Problems: Coll. Sci. Paper. UMMA* 2016;45:9-16. [In Ukrainian].

18. Zhakhovskiy VO, Livinskiy VG, Kudrenko NV, Slabkiy GO. Functioning of Medical forces of the Armed Forces of Ukraine in the conditions of reforming the healthcare system in Ukraine. *Ukraine Nation's Health* 2020;4(62):24-33. [In Ukrainian].
19. Naumenko K, Belikov A. Questioning of the Military Personnel of the Chernivtsi Boundary Group Concerning the Level of Rendering the Dental Care. *Ukrainian journal of medicine, biology and sport* 2017;1(10):221-4. [In Ukrainian].
20. Kazmirchuk AP. Organization of the provision of specialized (highly specialized) medical care to servicemen of the armed forces of Ukraine (according to the National Military Medical Clinical Center "GVKG"). *Military medicine of Ukraine* 2017;1(17):24-33. [In Ukrainian].
21. Kalchuk AV. Ways of improving the medical support of the Armed Forces of Ukraine and other military formations during the anti-terrorist operation. *Problems of military health care* 2017;47:303-10. [In Ukrainian].
22. AJP-3.14. Allied joint doctrine for force protection. Edition A, Version 1. With UK national elements; 2015. 97 p.
23. STANAG 2466. Dental Fitness Standards for Military Personnel and a Dental Fitness Classification System; 2014. 112 p.
24. STANAG 2453/AMedP-35: The Extent of Dental And Maxillo-facial Treatment at Role 1-3; 2017. 148 p.
25. STANAG 2464/AMedP-31: Military forensic dental identification; 2014. 88 p.

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