

REVIEW

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On the dissertation of Dr. Simeon Zdravkov Chokanov "*Drug addicted patients – oral health and management*"

For the award of the educational and scientific degree "PhD" in the scientific specialty "Therapeutic Dentistry"

I present this review according to Order № P-109-101/07.03.2022 of the Rector of MU - Varna, by which I was elected an external member of the Scientific Jury, and according to Protocol № 1/17.03.2022 I am appointed to prepare a review. The dissertation is in the field of higher education 7. *Healthcare and sports*, Professional field 7.2. *Dentistry*, Scientific specialty *Therapeutic dentistry*.

1. Biographical data and career development of Dr. Simeon Chokanov

Dr. Simeon Zdravkov Chokanov was born in the town of Troyan on May 7, 1991. He graduated in 2010 at "Kliment Ohridski" High School, Troyan. In parallel with his secondary education in the period 2007-2010 he acquired the specialty "Chemical-technological production of drugs" and professional qualification "Chemist-operator" with additional training in ACTAVIS Ltd - Troyan. In 2017 he graduated from the Faculty of Dental Medicine, Medical University – Varna as Master of Dentistry. From 2017 to 2019 he obtained a qualification in "Health Management" at MU - Varna.

During his studies, the candidate participated in the Project "European Internship Program for Students", supplementing his knowledge and skills with internships in dental practices, at the First Moscow Medical University "I.M. Sechenov", Northwestern State Medical University "I. Mechnikov" in St. Petersburg, works as a sales representative in a company for medical and specialized equipment "Elpak – Ltd".

In 2017 he started working as a part-time lecturer in the Department of Conservative Dentistry and Oral Pathology, Faculty of Dental Medicine, MU - Varna, and since 2018 he is a full-time assistant in the same department, where he continues to work.

From 2018 Dr. Chokanov has been working as a dentist at the University Medical and Dental Center of the FDM, Medical University of Varna, where he continues to work.

Dr. Chokanov is enrolled in full-time form of PhD-program by Order of the Vice-Rector of MU - Varna № P-109-258/01.08.2019 for the development of topic "Drug addicted patients – oral health and management" with research supervisor Assoc. Prof. Dr. Asya Krasteva-Panova, DDM, PhD, DMSc. He presented a Protocol for successfully passed exam for doctoral minimum in the specialty. He has completed the PhD program with the right to defense, according to Order of the Rector of MU - Varna № P-109-101/07.03.2022.

In his autobiography Dr. Simeon Chokanov presents data on active scientific and social activities - participation in scientific forums in Bulgaria and abroad, he has held senior positions in the student community of MU - Varna and others. He is a member of Bg Dental Association, Bg Scientific Association of Dental Medicine, Union of Bulgarian Scientists and Bulgarian Society of Obstructive Sleep Apnea and Snoring. He is fluent in English, at a good level - German and satisfactory - Russian.

The data from the autobiography present Dr. Simeon Chokanov as a young, ambitious and promising scientist, with a clear striving for perfection.

2. Description of the dissertation and the abstract

The dissertation is written on 145 standard typewritten pages in good Bulgarian language, structured as follows: Introduction (2 pages), Literary Review (23 pages), Purpose and tasks (1 page), Material and methods (14 pages), Results and discussion (55 pages), Practical applications (2 pages), Summary (3 pages), Conclusions (2 pages), Contributions (1 page), Publications, connected with the dissertation (1 page), Bibliography (19 pages), Annexes (16 pages) and Declaration of originality (1 page). It is illustrated with 27 tables and 33 figures.

The bibliography includes 218 literature sources, arranged alphabetically, of which 8 are in Cyrillic and 210 - in Latin. From the last 10 years there are 36 literary sources (16.5%).

The abstract, in a volume of 48 pages corresponds to the dissertation and gives a clear idea of the nature, results and conclusions of the study.

3. Relevance of the topic

One of the serious socially significant problems in modern society is drug addiction, which has been on the rise in recent years. Drug abuse ranges from casual use for "entertainment, invigoration" to drug addiction, addiction to persistent opiate use. Along with serious problems in general physical and mental health, drug addicts often suffer from various diseases of the oral cavity - candidiasis, leukoplakia, xerostomia, multiple caries, cheilitis, periodontitis, aphthous stomatitis, etc., and these diseases are associated with their drug addiction.

The work of doctors, including dentists, with drug addicted patients is difficult due to their behavioral unpredictability and easy irritability, as well as the fact that they are often carriers of dangerous infectious diseases - AIDS, Hepatitis B and C and others. This requires a broader study of the specific pathology of drug addicted patients, as well as the prevention of risks for both medical staff and patients themselves. This makes the chosen topic relevant and timely.

4. Literary review

The literature review is an analysis of 218 literature sources and is structured in 7 subsections on: the current state of drug addiction; characteristics of various drugs and their relationship with pathological changes in the oral cavity; the use of alcohol, drugs and smoking in drug addicts and their impact on tissues and organs in the oral cavity; susceptibility of drug addicted patients to infectious diseases; the impact of long-term drug use on oral health; problems in clinical practice in the treatment of drug addicted patients, and finally - what are the unresolved problems in the dental treatment of drug addicted patients. The analysis of the literature sources gives grounds for Dr. Chokanov to determine the purpose of his research.

5. Purpose and tasks

The goal is well formulated - to assess oral health and the peculiarities of oral pathology in drug addicted patients and to develop an algorithm for their prevention and treatment. To achieve this goal, 5 specific tasks have been set.

6. Material and methods

The study was conducted on 154 patients aged 18 - 65 years, divided into two groups - drug addicted patients - 81 and control group - 73 people. The working group included drug addicted patients who were on detoxification therapy, and the control group included patients visiting a dental office. The criteria for inclusion of persons in both groups are defined in detail. Each patient underwent a clinical examination with registration of oral status, saliva examination, halitosis examination and questionnaire. Prior to the start of the study, patients were informed about the purpose and nature of the study and invited to sign an informed consent. The study was approved by KESIMUV. The obtained results were processed with statistical analyzes from the IBM SPSS 19.0 program.

7. Results and discussion

In this section of the dissertation the results of the 5 tasks are presented consecutively, and are discussed and compared with the results of similar studies published in world literature.

According to the first task, the two groups of persons were divided into 5 age groups and their oral status was assessed by determining the indicators: DMFT (Intensity of dental caries, i.e. average number affected by caries teeth per person), PBI-index (Papilla Bleeding Index), degree of tongue deposition, saliva characteristics, halitosis test (bad breath).

The conclusion from the comparison of the **DMFT-index** in the two groups shows a higher intensity of caries in drug-addicted patients (16.72), compared to the control group (12.4), and the differences are significant. In the working group, decayed teeth predominate among the teeth affected by caries, while in the control group - the filling teeth. These results are compared with the results of similar studies reflected in the literature review. The established indicators prove the higher risk of caries prevalence in drug-addicted patients.

The evaluation and comparison of the ***PBI index*** in the two groups of subjects showed a significantly worse condition of the gingiva in drug addicted patients in all age groups, and the differences were statistically significant. In the group of 55-65 year old drug addicts, who have the worst condition of the gingiva, the average value of PBI is 3.08 ± 0.43 , and in the control group - 1.88 ± 0.93 . This finding is related to the neglect of oral hygiene, which is a specific feature of the behavior of drug addicted. These results are analogous to the results of other similar studies.

The degree of deposition on the tongue is assessed visually and is photo-documented. Tongue deposition was found in 92.59% of drug addicted, while in the control group the frequency was only 6.85%. Tongue deposition in drug-addicted patients has been found in other studies and is associated with neglected oral hygiene and reduced salivation, which in turn is a prerequisite for the development of infections and halitosis.

The saliva of all patients was analyzed in several directions:

- *Level of hydration* - visual determination of the time of salivation from the small salivary glands located on the lower lip. The comparison between the two groups shows that the largest part of drug addicted patients (77.78%) fall into the group of low level of hydration, i.e. dry mouth is a characteristic feature of them.

- *Saliva viscosity*. The results of this study show that the saliva of drug addicted patients is more viscous compared to the control group.

- *pH of saliva*. In the working group a slightly lowered saliva pH was found, while in the control group the measured pH was normal. The slightly acidic environment of saliva is due to the reduced salivation of drug addicted. In the study of stimulated saliva, the pH was normalized due to increased salivary flow, but nevertheless there was a higher percentage of drug addicts with moderate acidity (6.17%) compared to the control group (1.37%).

- *Amount of saliva*. A comparison of the results in the two groups showed a significantly lower amount of stimulated saliva in the group of drug addicted. Literature sources have been cited showing a decrease in parotid salivary secretion

under the influence of opiates (amphetamine, marijuana), which persists long time after opiate use is stopped.

- *Saliva buffer capacity.* The buffering capacity of saliva determines the ability of saliva to eliminate acids produced by microorganisms and thus helps to alkalize the liquid content in the oral cavity. The results of this study show low values of buffer capacity in drug addicted patients compared to the control group. A comparison of these results with the results of similar studies shows similarities with some studies and discrepancies with others.

- *Microbiological examination of total unstimulated saliva.* Microbiological examination of saliva in drug addicted shows high levels of growth of Str.Mutans, Lactobacillus, Candida, especially Candida Albicans. These results correlate with the results of similar studies.

Test for halitosis (bad breath). The largest part of drug addicted fall into the group of "moderately bad breath", but people with "severe bad breath" and "extremely bad breath" are significantly more than in the control group. Reasons for this can be found in higher frequency of xerostomia, coated tongue, neglected oral hygiene, inflammation of the oral mucosa and others in drug addicted.

Results and discussion on task 2:

According to the medical records of patients with drug addiction, Dr.Chokanov found that 81.4% of them were diagnosed with Hepatitis C, 67.9% with Hepatitis A, 66.7% with Hepatitis B, 8.6% with AIDS. A comparison with the results of similar studies shows analogous results.

The presence of these infectious diseases worsens the pathology in the oral cavity. The comparison of the pathological findings (periodontal disease, Leukoplakia, Lihen Planus, Herpes simplex, aphthae, etc.) in the oral cavity in the two groups of subjects shows a higher frequency in drug addicted patients compared to the control group.

An inquiry was conducted among the surveyed persons, which established their socio-demographic status. Most of the drug addicted have low social status, are single, without professional education, unemployed, while in the control group the results are radically different. These social characteristics of drug addicted,

together with the fact that dental treatment is not a priority for them, are the reasons for their poor dental and oral status.

Results and discussion on task 3:

Drug-addicted patients were divided into groups according to the drug they have used, as they were all on methadone therapy at the time of the study. Due to the fact that they have used more than one drug, it is difficult to determine the effect of individual drugs on oral pathology. Here is an extensive review of the literature on the effects of various drugs on tissues and organs in the oral cavity.

Results and discussion on task 4:

The results of the inquiry compared the impact of dental status on the quality of life of the two groups of subjects. Drug addicted report difficulties in registering for visits to the dentist and a large percentage of them (36.17%) have not attempted such visits. The control group did not share such difficulties. All respondents reported complaints of dental health (dry mouth, toothache, bleeding gums, etc.), but a very small percentage of drug addicted - 20.99% sought help from dentists, while in the control group this percentage was 91.78. This proves the neglect of dental health by the drug addicted. Literature sources supporting these results are cited.

Results and discussion on task 5:

Dental treatment of drug-addicted patients is difficult and complicated. On the one hand, their deteriorating dental health, neglected by patients themselves, on the other hand - the legitimate fear of medical professionals to treat such patients is the challenge that led Dr. Chokanov to propose an Algorithm for a comprehensive approach for treatment of drug-addicted patients and Protocol of dentists' work with such patients.

Summary:

In this section Dr. Chokanov summarizes the results of the 5 main tasks.

Conclusions:

Dr. Simeon Chokanov draws conclusions in the order of the main tasks. It would be more correct to summarize the conclusions from the whole dissertation, so as to avoid repeating the conclusions – for example the conclusions 1.1.=4.4, 1.2. = 4.5., 2.1. = 4.3.

Contributions:

I accept without remarks the self-assessment of the candidate for the contributions of the dissertation, as they are in accordance with the results of the research and the analyzed literature sources on the studied problem.

Dr. Chokanov has popularized the results of his research in 2 published articles and 3 participations in international scientific forums - 2 abroad and 1 in Bulgaria.

Critical remarks and recommendations:

The noted technical omission - marked as tables with №№ 22, 23, 24 and 25 are figures, graphic images - does not reduce the value of the present work.

Conclusion:

The dissertation of Dr. Simeon Chokanov is a current study of a serious problem of our time - the increasing abuse of drugs by people of different ages. The impact of drug addiction on dental health with properly chosen goals and objectives has been studied and the results have been compared with the results of similar studies published in the world literature. An Algorithm for a complex medical and dental approach in the treatment of drug addicted and a Protocol for the behavior of dentists have been created.

The dissertation meets the requirements for this type of research and I recommend the esteemed members of the scientific jury to award the educational and scientific degree "PhD" to Dr. Simeon Zdravkov Chokanov.

05.04.2022

REVIEWER:



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