



**To the Chairman of the Thesis Committee,  
determined by Order № P-160 / 01.02.2021  
of the Rector of the Medical University - Plovdiv**

Attached I present : **A review**

under the procedure for obtaining the scientific degree "**Doctor of Sciences**"  
with candidate **Assoc. Prof. Iliyana Lyubomirova Stoeva, PhD** on the topic:  
**"Work-related skin and respiratory symptoms among dental staff"**

Review drawn up by: **Prof. Yavor Kaluchev, DMD, PhD**

Scientific specialties: **General and Prosthetic Dentistry**

Institution: **MU-Plovdiv, FDM, Department of Prosthetic Dentistry**

Contacts:

Postal address: **4003 Plovdiv, 3 Hristo Botev Str.**

E-mail: **ykalatchev@yahoo.com**

Phone: **0887 877 385**

## **Review**

by

**Prof. Yavor Kaluchev, DMD, PhD, Department of Prosthetic Dental  
Medicine, FDM, Medical University - Plovdiv**

on a dissertation for the award of a scientific degree, **“Doctor of Science“**

**Author: Associate Professor Iliana Lyubomirova Stoeva PhD**

**Topic: „ Work-related skin and respiratory symptoms among dental  
staff“**

### **Brief biographical data about the candidate:**

Assoc. Prof. Dr. Iliyana Lyubomirova Stoeva was born on May 18, 1977. In 2002 she graduated from FDM-Sofia. In 2009 she acquired the scientific degree "Doctor", with a thesis topic: "Intraoral contact hypersensitivity to dental prosthetic materials". In 2010 she acquired a specialty in Prosthetic Dentistry, and in 2015 in Dental Clinical Allergology. She has been an associate professor in the Department of Imaging Diagnostics, Physiotherapy and Allergology in the Faculty of Dental Medicine at the Medical University of Plovdiv since 2012, and since 2020 she has been head of the same. Since 2020 she has been vice dean of Science and Research Activities, at the FDM of Medical University – Plovdiv.

The scientific activity of Assoc. Prof. Dr. Iliyana Stoeva includes participation in 6 scientific projects, in 2 of which Assoc. Prof. Stoeva is the leading scientist; author of over 60 scientific publications in the field of dental allergology, co-author of four textbooks and one manual for students; independent author of a practical manual to dental clinical allergology.

The thesis presented to me for review contains 270 standard typewritten pages with a bibliography consisting of 546 authors, of which 8 in Cyrillic script and 538 in Latin script, and 4 appendices. It is illustrated with 45 figures and 57 tables. The dissertation is well structured, which facilitated the review preparation.

The **Introduction** emphasizes the fact that modern dental medicine offers a wide range of materials and techniques for the restoration of the dental and maxillary systems. In their daily practice, dental staff (dentists, dental technicians and nurses) is exposed to many allergenic components from dental materials, disinfectants and protective equipment (gloves, masks).

Amidst the occupational diseases caused by chemicals in the work environment, the most common among dental staff are skin diseases, in particular – occupational contact dermatitis,

The lack of in-depth research in our country, the constant evolution of materials, the need for modern analysis of work-related adverse skin and respiratory symptoms determines the **topicality** of the dissertation.

The **literature review** addresses in detail issues related to: epidemiology of specific skin and respiratory symptoms; characteristics of contact dermatitis: mechanism of allergic and irritant contact dermatitis; occupational contact dermatitis; respiratory hypersensitivity, etc.

At the end of the literature review, the conclusion is made that: the timely diagnosis of occupational allergy is of great importance for the rapid and successful cessation of related symptoms. This depends on both the competence of the specialists in the diagnostic process and the awareness of the dental staff themselves, who must actively seek qualified help in order to prevent the aggravation of symptoms.

The above facts give grounds for the candidate to formulate:

**The aim** of the dissertation: to study the prevalence, characteristics and risk factors for the occurrence of occupational skin and respiratory symptoms among dental staff.

In order to meet the set aim, **5 tasks** have been formulated and completed.

**The materials and methods** of the study are correctly and adequately selected, the use of a sufficient number of modern **statistical methods** for processing the obtained data ensures that reliable and objective **results** are attained.

A questionnaire survey covering 5993 members of dental staff (dentists, nurses, dental technicians, students), was conducted in order to complete the first two tasks:

**Task one:** To study the prevalence, characteristics and risk factors for the occurrence of **skin reactions** related to the work environment among dental staff on the basis of self-assessment through a survey.

**Task two:** To study the prevalence, characteristics and risk factors for the occurrence of **respiratory reactions** related to the work environment among dental staff on the basis of self-assessment through a survey.

The questionnaire for the conducted surveys includes data on:

1. Demographic characteristics (sex, age).
2. Adverse effects from irritants found in the work environment.
3. Evolution of work-related skin and respiratory reactions.
4. Working habits (work experience, specialty, working hours, use of gloves, material of gloves, duration of contact, frequency of hand washing).
5. History of hereditary diseases, as well as for contact, drug and food allergy.

**The results obtained show that:**

A significant part of the interviewed dental staff reported **skin** symptoms related to the work environment. The highest relative share is registered in the group of dental nurses (33.3%), followed by dentists (31.6%), dental technicians (29.3%) and dental students (21.2%).

**Respiratory** symptoms are less common, with the highest relative share in the group of dental technicians (26.2%), followed by dental nurses (23.7%), dentists (20.7%) and students (12.4%)

**Task three:** To identify contact allergens in modern dental materials and disinfectants.

89 material safety data sheets of materials and agents used in the dental environment were analyzed. A summary of the main standardized allergens included in the composition of dental materials has been performed.

**Task four:** To determine the role of sensitization to occupational allergens among dental staff for the occurrence of skin symptoms as a result of the working environment.

An epicutaneous test was performed on the dental staff members who reported symptoms related to the work environment. The study was performed in order to determine the prevalence, nature and severity of contact dermatitis among dental staff.



The allergy test was performed with 40 standardized allergens from the work environment. Morphological criteria for contact dermatitis were found in half of the subjects who at the time of testing had objective clinical manifestations.

In 47.1% of the subjects a positive epicutaneous test for occupational allergens was proven, but in a quarter this test is of clinical significance. In addition, sensitization to latex protein was found in 4.0% of participants, and in one of them it was accompanied by sensitization to acrylic monomers.

It was established that the lack of information about all etiological factors from the work environment, causing skin reactions on the hands, self-diagnosis, as well as incomplete diagnosis by specialists, are obstacles to the proper diagnosis and effective treatment of allergic contact dermatitis.

**Task five:** to create a register of dental staff with work-related skin or respiratory symptoms.

The candidate finds that the rapid introduction of new technologies in dental practice is accompanied by the introduction of new materials. Their composition is constantly changing, which exposes dental staff to a variety of new allergens.

An electronic register has been created for the dental staff with skin and respiratory symptoms. The visualization of the data makes it possible to follow the trends in the professional sensitization of the dental staff during a certain period of time..

The results of the research give the doctor reason to draw the following important **implications:**

1. One third of the dental staff suffers from work-related skin symptoms, which can occur as soon as the period of student training.
2. The most significant risk factors for the occurrence of occupational skin symptoms for dental staff working in clinical conditions are frequent hand washing, female gender, longer work experience, prolonged contact with protective gloves (more than 4 hours a day) and history of atopic dermatitis and contact allergy.
3. The most significant risk factors for the occurrence of occupational skin symptoms in dental technicians are frequent hand washing, work with removable dentures and anamnestic data for atopic dermatitis and contact allergy.

4. A quarter of the dental staff suffers from work-related respiratory symptoms, which can occur as soon as the period of student training.
5. The most significant risk factors for the occurrence of work-related respiratory symptoms for dental staff working in clinical conditions are work experience of more than 10 years, anamnestic data for atopic disease, exposure to substances from the working environment for more than 6 hours a day and female gender.
6. The most significant risk factors for the occurrence of work-related respiratory symptoms in dental technicians is the lack of ventilation systems, anamnestic data for atopic disease, exposure to harmful substances from the working environment for more than 8 hours a day, and the risk of their occurrence is greatest in the first 5 years of work.
7. Aggravation of work-related skin and respiratory adverse reactions is most commonly reported by dental nurses and dental technicians.
8. The standard series for dental staff is insufficient for complex allergological diagnosis in case of suspicion of occupational allergy.
9. Contact dermatitis was found in 42.7% of the symptomatic dental medical staff, and in half of them contact sensitization with clinical significance to haptens from the working environment was established..

The more important **contributions** of the dissertation can be grouped as:

**Contributions of theoretical nature:**

1. An evaluation of the prevalence of occupational skin and respiratory symptoms among dental staff in the country.
2. The risk factors for the occurrence of occupational skin and respiratory symptoms among dental staff are presented.
3. An evaluation of the role of allergic mechanisms in the occurrence of work-related skin reactions in dental staff was made.

**Contributions of applied nature:**

1. Contact allergies caused by dental materials, protective equipment and disinfectants have been identified.
2. An electronic register for the dental medical staff with work-related skin and respiratory symptoms was created.

### **Assessment of publication activity**

In connection with the dissertation, Assoc. Prof. Dr. Stoeva presents 15 publications. This fact proves that the topic developed in the dissertation is her personal work.

**The author's summary** objectively reflects the dissertation. It is drawn up in accordance to the requirements of the law for the development of the academic staff.

I have no critical remarks on the reviewed thesis.

### **Conclusion:**

The thesis of Assoc. Prof. Iliyana Lyubomirova Stoeva PhD, "**Work-related skin and respiratory symptoms among dental staff**" is an in-depth study performed among dental staff in the country on occupational skin and respiratory symptoms, in which the survey was followed by a clinical examination and skin allergy tests.

The obtained results are valuable for clinical practice and can serve as a basis for future research.

I am confidently giving my positive vote for the award of the scientific degree "Doctor of Science" to Assoc. Prof. Iliyana Lyubomirova Stoeva PhD.

Plovdiv  
12.02.2021

  
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(Prof. Yavor Kaluchev, DMD, PhD)