

**RESEARCH AND EDUCATION IN THE BATTLE AGAINST
TOBACCO-RELATED ORAL DISEASES: TWO EXAMPLES
FROM A DENTAL SCHOOL**

Summary of PhD thesis

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1. List of publications providing the basis and related to the topic of the thesis

List of publications providing the basis of the thesis:

Antal M, Forster A, Zalai Z, Barabas K, Spangler J, Braunitzer G, Nagy K. A video feedback-based tobacco cessation counselling course for undergraduates- preliminary results. *Eur J Dent Educ* 2013 Feb;17(1):e166-172. **IF: 1.012** (2012)

Antal M, Braunitzer G, Mattheos N, Gyulai R, Nagy K. Smoking as a permissive factor of periodontal disease in psoriasis. *PLoS One*. 2014 Mar 20;9(3):e92333. doi: 10.1371/journal.pone.0092333. eCollection 2014. **IF: 3.730** (2012)

Further publication related to tobacco use and/or oral health :

Antal M, Forster A, Zalai Z, Barabás K, Ramseier C, Nagy K. Attitudes of Hungarian dental professionals to tobacco use and cessation. *Cent Eur J Public Health* 2012 Mar;20(1):45-49.

Antal M, Ramseier A, Barabás K, Forster A, Zalai Z, Nagy K. A dohányzás megelőzése és a leszokás támogatásának lehetőségei. *Fogorv Sz.* 2012 Sep;105(3):99-103.

Nagy J, Braunitzer G, **Antal M**, Berkovits C, Novák P, Nagy K. Quality of life in head and neck cancer patients after tumor therapy and subsequent rehabilitation: an exploratory study. *Qual Life Res* 2013 Jun 4. [Epub ahead of print] PubMed PMID: 23733663. DOI:10.1007/s11136-013-0446-1. **IF: 2.412** (2012)

Mesmer C, Forster A, **Antal M**, Nagy K. Alsó részleges kivehető fogpótlást viselő páciensek mikrobiológiai és immunológiai vizsgálata peri-implantitiszes és egészséges kontrollesoportba tartozó esetekben. (12 hónapos utánkövetés). *Fogorv Sz.* 2012 Jun;105(2):59-64.

Forster A, Velez R, **Antal M**, Nagy K. Width ratios in the anterior maxillary region in a Hungarian population – addition to the golden proportion debate. *J Prosthet Dent*. 2013; 110: 211-215. **IF: 1.724** (2012)

Baldea B, Furtos G, **Antal M**, Nagy K, Popescu D, Nica L. Push-out bond strength and SEM analysis of two self-adhesive resin cements: an in vitro study. *J Dent Sci*. 2013 Sep 1. 8(3):296-305 DOI:10.1016/j.jds.2013.01.007 **IF: 0.347** (2012)

Fráter M, Braunitzer G, Urbán E, Bereczki L, **Antal M**, Nagy K. In vitro efficacy of different irrigating solutions against polymicrobial human root canal bacterial biofilms. *Acta Microbiol Immunol Hung*. 2013 Jun; 60(2):187-199. doi:10.1556/AMicr.60.2013.2.9 **IF: 0.646** (2012)

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Book chapter:

Antal M, Nagy K (2013) : Tobacco use and cessation among dental professionals In: Péter Balázs: Increasing capacity for tobacco research in Hungary 2008-2013. 245 p. Budapest: Magyar Tudománytörténeti Intézet, 2013. pp. 151-174. (ISBN:978 615 5365 003)

2. Introduction

2.1. General introductory remarks and an outline of the thesis

Several chronic illnesses can be traced back to alcohol consumption, sedentary lifestyle, unhealthy nutrition and smoking. Smoking, in particular, is a global public health problem. Tobacco use is identified as one of the most important risk factors for oral cancer.

Universities are distinguished venues of research, but also of education, and therefore in a university framework one can battle smoking-related oral diseases on two fronts: one is that of research where knowledge is produced, and the other is teaching, where it is disseminated. The present thesis follows this logic. First, after a review of the literature, a piece of clinical research is presented, where it is shown that smoking possibly has a permissive effect on the occurrence of severe periodontal disease in psoriatic patients. This is followed by the introduction of an educational method developed and introduced at our faculty, the Faculty of Dentistry at the University of Szeged. The method, which is now part of the curriculum of the faculty and also of other Hungarian and foreign dental faculties, was developed to enable dental students to offer tobacco cessation counseling by providing both theoretical knowledge and skills training.

2.2. Tobacco use and oral health

Tobacco use has been described to have several consequences on the human body, including several types of cancer. Of these, lung cancer has been the most common cancer in the world for several decades. In 2012, 1.8 million new cases have been registered worldwide, which is 12.9% of the incidence of all types of cancer. Cigarette smoking and other ways of tobacco use can be associated with approximately 75% of oral cancer cases. In Hungary, the incidence and mortality of cancers of the lip and oral cavity is the highest in Europe, and the incidence of

lung, lip and oral cancers together - where smoking is the single highest risk factor - is the highest in the world.

2.3. Links and associations between oral and extraoral diseases: the rationale behind the clinical study

Several oral conditions are associated with systemic diseases, and it is a well-known fact that the oral manifestations of such diseases can often be of diagnostic value. Numerous studies describe the interplay between systemic diseases and oral conditions. The most often studied of such conditions is periodontal disease. Periodontal disease is a destructive inflammatory disease of the supporting tissues of the teeth and is caused by specific microorganisms. Several studies demonstrated connection between periodontal disease and a considerable number of systemic conditions, and in most of these cases the connection cannot be put down simply to lasting bacteraemia.

In the first part of the present thesis, a study about periodontal health and psoriasis is discussed with a special focus on the effect of tobacco use on both conditions. Since the first cross-sectional pilot study in 2010 that raised the issue of the association between psoriasis and chronic destructive periodontal disease, surprisingly few studies have examined the claimed link. Evidence published so far unequivocally suggests that the two conditions are related. In our clinical study, we sought to test if the link does indeed exist (as suggested), but a new aspect was also added. As both smoking and psoriasis has been proposed as triggers and/or aggravating factors in periodontal disease, the new research objective was to find out about how smoking influences the severity of periodontal disease in the presence of psoriasis, that is, when both predisposing factors are present.

2.4. On the need to introduce tobacco cessation counseling into the dental curriculum

In the European Union, less than 10% of dentists smoke every day, however, in Eastern Europe, the situation is far from being that optimal. In our studies regarding this question, we found a decreasing, but still quite high percentage of smokers among dentists and dental students. Several data point out that smoking (and tobacco use in general) among dental students and dentists shows a high geographical variability, and that Hungary is among the more affected areas. This means that the tobacco-related health-consciousness among Hungarian dental students and dentists is still not at the level that could shape their actual behavior. On one hand, this puts students' and dentists' health at risk, but on the other hand, a smoking dental professional cannot serve as a valid and congruent role model for cessation, which means that such professionals miss an important chance to support their smoking patients' health.

3. Periodontal disease in psoriasis as determined by smoking: further evidence to support the immunomodulatory effect of cigarette smoke

3.1. Background and aims

Population-based studies have identified smoking as a pathogenetic factor in chronic periodontitis. At the same time, chronic periodontal disease has also been found to occur more often in persons suffering from psoriasis than in controls with no psoriasis. It is known that smoking aggravates both periodontal disease and psoriasis, but so far it has not been investigated how smoking influences the occurrence and severity of periodontal disease in psoriasis.

3.2. Methods

A hospital-based study was conducted to investigate this question. The study population consisted of 82 psoriasis patients and 89 controls. All patients received a full-mouth periodontal examination, and a published classification based on bleeding on probing, clinical attachment level and probing depth was utilized for staging. Both patients and controls were divided into smoker and non-smoker groups, and the resulting groups were compared in terms of periodontal status. Beyond the descriptive statistics, odds ratios were computed.

3.3. Results

Psoriasis in itself increased the likelihood of severe periodontal disease to 4.373 (OR, as compared to non-smoker controls, $p < 0.05$), while smoking increased it to 24.278 (OR, as compared to non-smoker controls, $p < 0.001$) in the studied population. In other words, the risk of severe periodontal disease in psoriasis turned out to be six times higher in smokers than in non-smokers.

3.4. Conclusions

The results of this study corroborate those of other studies regarding the link between psoriasis and periodontal disease, but they also seem to reveal a powerful detrimental effect of smoking on the periodontal health of psoriasis patients, whereby the authors propose that smoking may have a permissive effect on the development of severe periodontal disease in psoriasis.

4. Introducing tobacco cessation counseling into the dental curriculum

Considering that, as mentioned above, Hungary is a leading country in terms of tobacco-related morbidity and mortality, with a notable percentage of smokers among dental students and dentists, and that the dental office could be a distinguished venue of tobacco use interventions if well-prepared professionals

were available who could also serve as a role model, we decided to introduce a new element into the curriculum of the Faculty of Dentistry at the University of Szeged. This new curricular element was intended to provide dental students both theoretical and practical training in cessation counseling, so as to enable them to offer such counseling and also to increase their tobacco-related health-consciousness. The second part of the thesis describes the methodology of this new curricular element, and also discusses the initial experiences.

4.1. Cessation support by oral health professionals

As it is estimated that the rate of smokers who see their dentist or physician annually is about 70%, to involve all health care providers in tobacco intervention seems to be a promising strategy to reduce tobacco use in countries like Hungary. Such an intervention should obviously include the dental health team. It has already been suggested by experts on this topic that instruction in tobacco use prevention and cessation counseling for dental professionals and students of dentistry should be included in under- and postgraduate curricula.

The objective of the following study was to present a novel, videofeedback-based undergraduate cessation counseling programme, which has recently been introduced into the dental curriculum at the Faculty of Dentistry, Szeged, Hungary.

4.2. Methods

With all the information available in the literature and our experience of dentist-patient communication in mind, we proposed a new course titled „Smoking prevention in the dental practice” in the period 2008-2009. The course proposal was accepted by the Education Committee of the dental school in November 2009, and the first course started in February 2010, the spring semester of the academic year 2009-2010. The Semmelweis University in Budapest followed suit in 2011. Applying a problem-based learning approach, the programme consists of three

main activities: a small- group interactive training session led by a faculty member, where students learn about the basic science and clinical aspects of tobacco use, including counseling skills; student interactions with professional actors (i.e. standardized patients) simulating real-life dental situations, which are recorded for post-hoc evaluation; and finally an evaluation of the recorded performance of each student, with the participation of the actor, the student and a faculty member.

4.3. Results

With the help of this new approach students had the chance to learn about and develop a deeper understanding of tobacco-related professional dental communication in realistic, case-based dental scenarios. Students have reported increased confidence in tobacco counseling after having participated in this programme. Furthermore, this method appears to be an ideal tool for the evaluation of both verbal and nonverbal tobacco counseling skills.

4.4. Conclusion

To our knowledge we are the first to have applied videofeedback combined with behavioral modification methods in the teaching of tobacco cessation counseling. We conclude that teaching method can help dentists better understand smokers, gain confidence in tobacco cessation counseling, and become more effective promoters of a smoke-free lifestyle. In addition, this method can be easily adapted to other health care educational settings, including other oral health training programs.

5. Thesis summary and recapitulation

Rolling back tobacco-related oral diseases, or at least keeping them at bay is a task of utmost importance in a country which occupies a leading position in terms of both tobacco-related mortality and the number of oral cancer cases. The task is

immense, and the possible approaches are countless. In this thesis, two examples from our recent work in the field have been presented, which are tiny steps in the whole process, but we do believe that such tiny steps add up to real solutions.

As for the research segment, we showed that smoking puts psoriasis patients at a massively increased risk of severe periodontal disease, the immediate message of which is that such patients should stay away from smoking as much as they can, so that further deterioration of their already poor health and quality of life can be prevented. At the level of scientific interpretation, this result points to the massive immunomodulatory capacity of cigarette smoke, and marks the path for further research into how cigarette smoke can give rise to secondary pathology in chronic inflammatory conditions.

In the second part of the thesis, an entirely new university course was introduced, which was developed at our faculty in order to enable students to provide tobacco cessation support and also to address the problem of high levels of smoking among oral health professionals. This course - now offered in two consecutive semesters - is based on a complex approach, that is, a strong theoretical priming is completed by skills training and practice. A central element of the practical part is videofeedback, which we were the first to introduce into the methodology of cessation support training. The initial results are promising, and although it would be too early to say about anything about the efficacy of the programme in terms of actual quit rates, the change in student attitudes can be felt already.

These results set the directions for the years to come, and the work goes on in the firm belief that even if smoking is a disease of mankind one cannot ultimately cure, one must still care.

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