

Preventive Dentistry: Current Working Practices of Dentists From the South-Eastern Region of Romania

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Abstract

Aim: To evaluate the current working practices in preventive dentistry of dentists from six Romanian districts: Constanta, Braila, Galati, Tulcea, Buzau and Vrancea (the South-East Romanian Development Region). **Methods:** The study was performed using a representative sample of 292 dentists (95% C.L., 5.16% sampling error); the assessment tool was a questionnaire with 42 questions, 12 of which assessed current practices in prevention. The responses to these 12 questions are reported in this paper. **Results:** Two hundred and seventy-three (94%) of the respondents considered that universities should offer more lectures on prevention, 207 (71%) reported that they applied topical fluorides, 260 (89%) provided instruction in oral hygiene, 220 (75%) provided fissure sealing, 83 (28%) provided sealant restorations and 278 (95%) scaled teeth. Two hundred and fifty-five (87%) dentists stated that they believed they could influence the patient's caries risk, 252 (86%) recommended individualised tooth-brushing techniques, 54 (18%) responded that they were not influenced in clinical decision making by the concern for infection transmission from a possibly infected patient, 239 (82%) claimed that they are tested annually for the major blood-borne diseases, 204 (70%) said they used dry-heat sterilisation and 194 (66%) that they used wet-heat sterilisation, and 258 (88%) considered that they should wear complete personal protective items (gloves, mask, etc.) when treating all patients. **Conclusion:** The results of this study demonstrated the need to increase the awareness and skills of dentists from the South-East Development Region of Romania regarding the prevention of oral diseases, especially in terms of cross-infection control in dentistry, in order to meet European Union standards and to ensure health and safety at work in dentistry.

Key Words: Working practices, Prevention, Dentists, Romania

Introduction

Professional practice reflects the structure of health services in which it takes place and is related to the underlying principles of the prevailing health care model [1]. Despite the fact that the majority of oral disease is preventable [2], dental services currently focus primarily on the treatment of existing disease. Successful preventive dentistry requires that it is comprehensive and includes both chair-side and counselling procedures. The chair-side clinical procedures include topical application of fluorides, application of pit and fissure sealants, and oral prophylaxis. Counselling procedures include giving advice on mechanical and chemical plaque control and guidance on diet.

It is the responsibility of the dentist to determine the preventive dentistry needs of his/her

patient based on a clinical assessment of the oral soft tissues, teeth, and periodontium, an assessment of the medical and social history, and diet. Because patients are predisposed to some dental problems depending on their age and other factors, the management of the preventive procedures must consider the present and also the possible future oral problems of the patient.

The efficacy of preventive dentistry can be measured objectively by scores and indices, and the frequency of repeating procedures depends on the proven individual, clinical needs of the patient.

Usually, in the developed countries, the delivery of preventive dentistry can be monitored (followed) by dental insurance carriers through peer review of clinical services, data sheets, case notes, dental records, and by patient questionnaires, so

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that the insurance carrier can underwrite this type of cover as part of a dental insurance plan [3].

In order to align the practice of dentistry in Romania to European standards, assessment and improvement of the current practices of dentists in prevention is essential. The present study was conducted within the “Ergonomics, prevention and performance management in dentistry by alignment to European standards project” [4]. The project beneficiary was the Romanian Society of Dental Ergonomics (SRED), and the partners in Romania were Ovidius University of Constanta, Carol Davila University Bucharest, University Victor Babes Timisoara, University Grigore T. Popa Iasi, and Aleron Trading SRL Bucharest.

The main objective of the project was training in the fields of ergonomics, prevention and modern management of personnel working in dentistry and health management.

Within the remit of this project, research on current practices in the field of ergonomics and prevention in five development regions of Romania was performed. Ovidius University was responsible for these activities in the south-east region of the country, which includes the county of Constanta.

Aim

The aim of the study was to evaluate the current working practices in preventive dentistry of dentists from six Romanian districts: Constanta, Braila, Galati, Tulcea, Buzau and Vrancea—the South-East Romanian Development Region.

Methods

The methodology and research tools for this study (and for the other studies performed by the other partners in the project) were developed by the SRED.

A representative sample of 348 dentists (95% C.L., 4.62% sampling error) was selected by stratified multistage sampling from the 1530 dental practitioners registered to practise in Constanta, Braila, Galati, Tulcea, Buzau and Vrancea districts.

The assessment tool was a questionnaire with 42 questions (divided in three parts) to assess the dentists’ current working practices in ergonomics, prevention and management. It had been piloted prior to its distribution. The responses to the 12 questions relating to current practices in prevention (*Figure 1*) are reported and analysed in this paper.

After signing an informed consent document,

the dentists answered the questions from the questionnaire during face-to-face interviews conducted by three calibrated interviewers. Their intra-examiner reliability was assessed by repetition of applying the questionnaire for 10% (n=29) of the dentists after a 10-day interval. The inter-examiner reliability was achieved by double-blind duplicate examinations of 10% of dentists. Strict confidentiality for all responses was maintained at all times.

Ethical approval

Permission to conduct the study was given by the Professional Ethics Committee of Ovidius University, Constanta, and by the Ethics Committee of the Medical College of Constanta District. As mentioned previously, written informed consent was obtained from all participants.

Statistical analyses

Data were analysed using statistical software (SPSS version 12 for Windows; SPSS Inc, Chicago, USA). The test–retest reliabilities of the questionnaire and of the interviewers were tested using kappa statistics. Descriptive statistics were used for the analysis of the questionnaire’s answers. ANOVA was used for testing inter-group variation.

Results

The response rate was 84% (56 subjects refused to take part in the study). The final sample comprised of 292 dentists (95% C.L., 5.16% sampling error), of whom 97 (33%) were male and 195 (67%) were female.

The kappa value for test–retest of the questionnaire was very good (0.88). The intra-reliability of examiners regarding the objective oral health indices assessed in the study was 0.84 (very good); the inter-examiner reliability was 0.77 (substantial). The answers to the first question (Q1) concerning the need for more training in preventive dentistry showed that, at regional level (*Figure 2*), the majority of subjects 272 (94%) believed that this would be useful, 8 (3%) were not sure whether it would be useful, and just under 4% (11) believed it to be unnecessary.

There were no significant differences between the answers to Q1 according to the district, gender or years in practice ($P>0.05$; ANOVA), but only according to the age of the dentist ($P<0.05$;

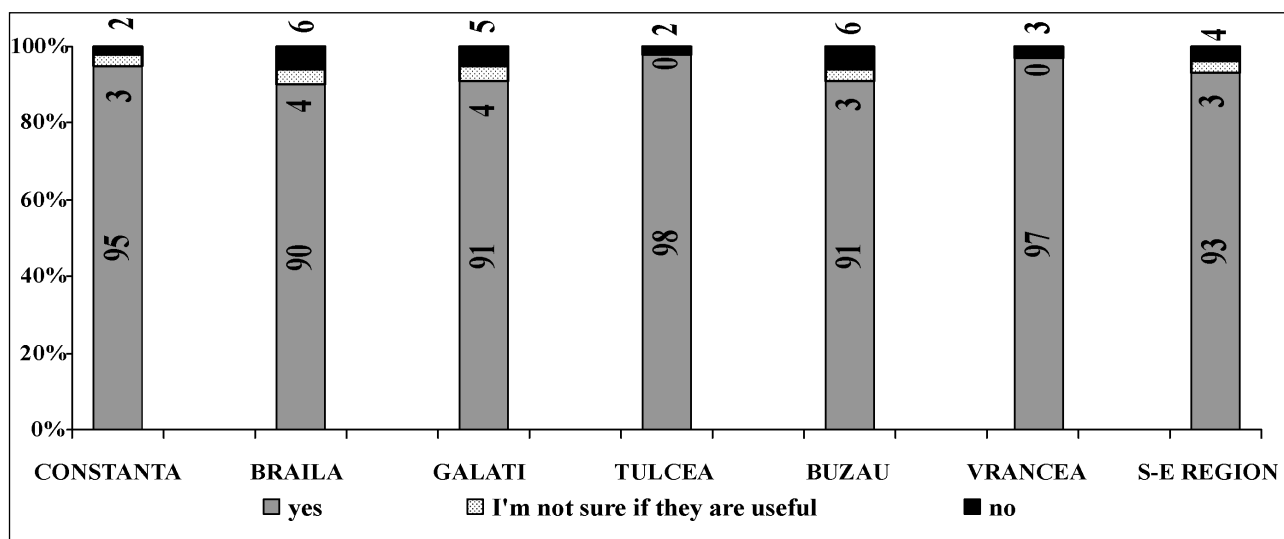


Figure 2. Answers to question 1: Do you believe that universities should offer more training in preventive dentistry (for patients, dentists, and auxiliary staff)?

ANOVA); the most positive answers were given by those aged 45-55 years.

As regards the oral prophylactic activities delivered to patients, the results of Q2 (Figure 3) were as follows: 207 (89%) reported that they provided topical fluoridation, and the same number oral hygiene, 220 (75%) reported providing fissure sealants, 83 (28%) reported providing sealant restorations, and 278 (95%) reported providing scaling.

There were significant differences between districts ($P < 0.05$; ANOVA), fissure sealing and sealant restorations were reported as being performed most frequently in Constanta and least frequently in Braila ($P > 0.05$, ANOVA). There were

no significant differences between genders in terms of the frequencies of performing all these activities.

As regards the age of the dentists, there were significant differences ($P < 0.05$; ANOVA) for all assessed activities with the exception of scaling. Topical fluoridation was reported as being provided most often by those aged 55-65 years, prophylaxis by those aged 45-55 years, fissure sealing by those aged 25-35 years, and sealant restorations by those aged 35-45 years.

There were also significant differences in the reported frequencies with which some of these activities were performed. Instruction in oral hygiene was performed most by those who had been in practice for over 20 years, fissure sealing

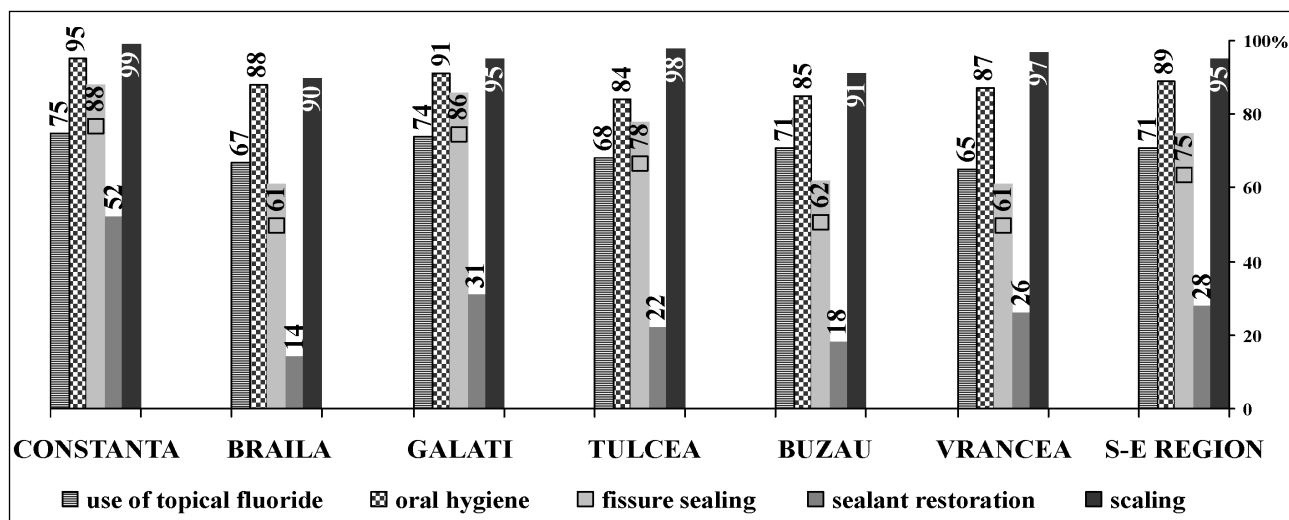


Figure 3. Answers to question 2: What types of oral prophylactic activities do you perform for your patients?

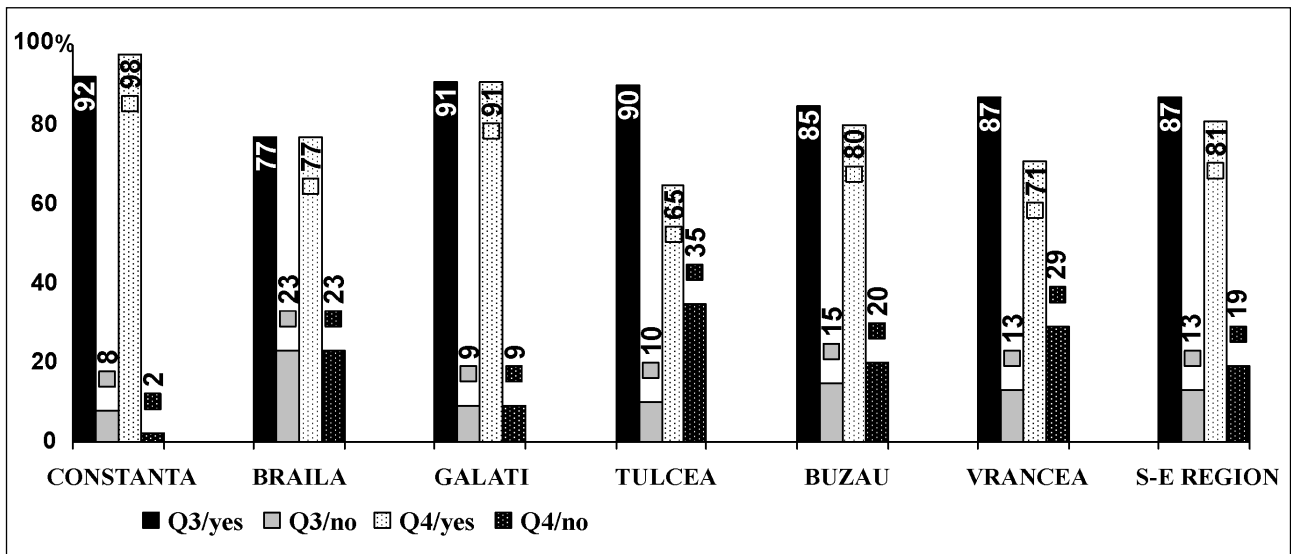


Figure 4. Answers to questions 3 and 4: Do you believe you can influence the caries (Q3)/periodontal (Q4) risk of the patient?

by those in practice for 0-5 years, and sealant restorations by those in practice for 10-20 years.

The answers to Q3 and Q4 indicated that 255 (87%) dentists believed that they could influence the caries risk of the patient, and 236 (81%) believed that they could influence the periodontal risk of the patient (Figure 4). There were significant differences between the frequency of answers regarding the periodontal risk ($P < 0.05$; ANOVA), the most positive answers were given by dentists from the Constanta District. There were no significant differences in the answers to Q3 and Q4 according to the gender, age or years in practice.

Nearly all (286; 98%) of the dentists agreed that tooth-brushing techniques influenced the effi-

ciency of plaque removal (Q5) and 252 (86%) recommended a specific tooth-brushing technique (Q6), individualised for each patient (Figure 5). The answers to Q5 and Q6 did not differ significantly according to the district, gender, and years in practice ($P > 0.05$; ANOVA). Answers to Q6 differed significantly only according to age of the dentists ($P < 0.05$; ANOVA), the most positive answers were given by those aged 35-45 years.

Question 7 asked whether the dentist's concern for preventing the transmission of infection affected their clinical decision making in the case of a possibly infected patient; 167 (57%) answered "yes", 54 (19%) answered "no" and 71 (24%) answered "sometimes" (Figure 6). The answers to

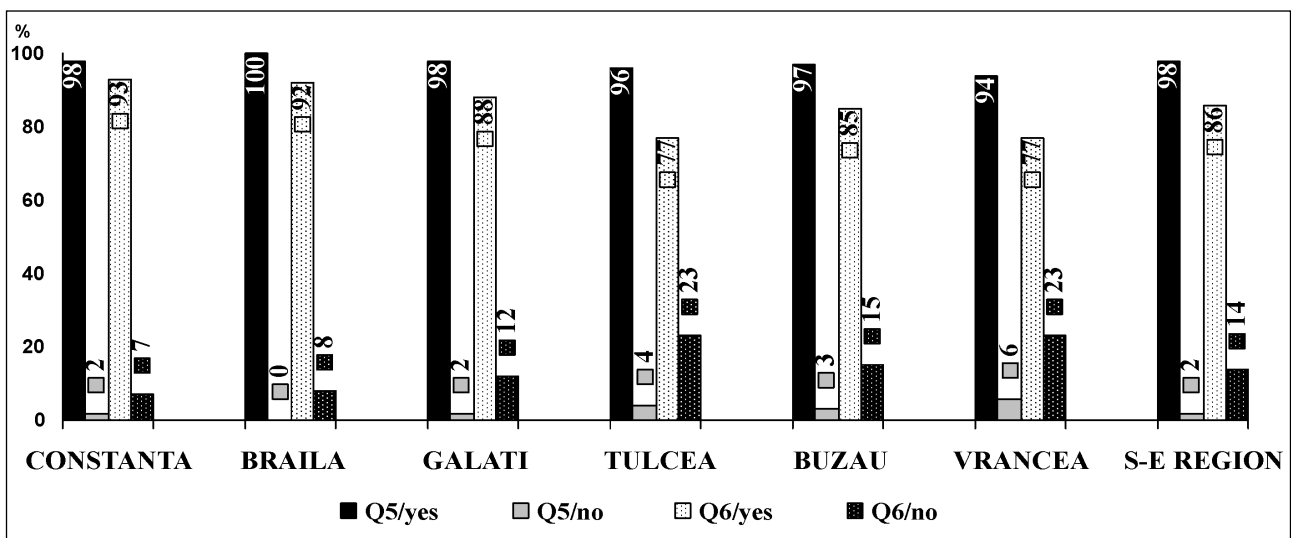


Figure 5. Answers to questions 5 and 6: Q5. Do you believe that the tooth-brushing technique that a patient uses can influence the efficiency of plaque removal? Q6. Do you recommend a specific tooth-brushing technique, individualised for each patient?

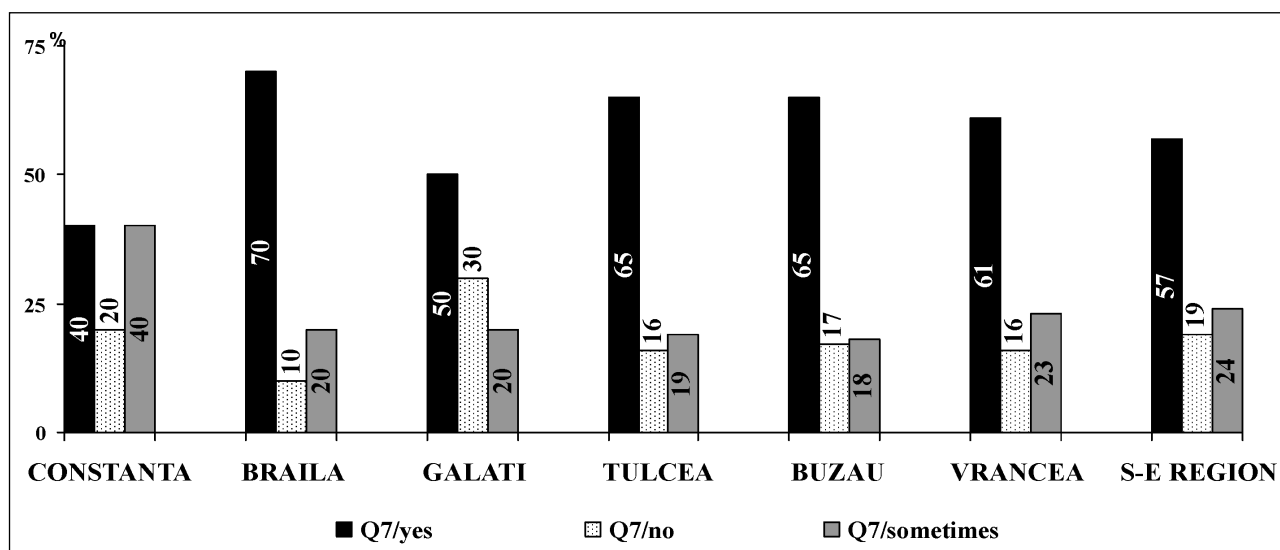


Figure 6. Answers to question 7: Does concern for preventing infection transmission affect your clinical decision making in the case of a possibly infected patient?

this question were not significantly different according to age, gender, and years in practice ($P>0.05$; ANOVA), but only according to the district ($P<0.05$; ANOVA); the most positive “yes” answers were given by dentists from the Braila District.

The answers to question 8 (Figure 7) showed that 239 (82%) respondents said that they were tested annually for diseases transmitted by blood (these annual tests for dentists include tests to detect syphilis and hepatitis B and C). This percentage was not significantly different according to the district, age, gender, and years in practice ($P>0.05$; ANOVA).

In terms of the activities considered unnecessary for increasing productivity in the dental office (clinic) (Q9), the frequencies of the positive answers were as follows: 41 (14%) dentists gave positive answers for dental unit disinfection between patients, 31 (11%) for hand-piece sterilisation, 50 (17%) for patient positioning before performing clinical procedures, 42 (14%) for dental chair height adjustment, 95 (33%) for changing the patient’s position during treatment and 32 (11%) for adjustment of the light source (Figure 8). These answers did not differ significantly ($P>0.05$; ANOVA) according to age, gender, and years in practice, but only according to the district ($P<0.05$;

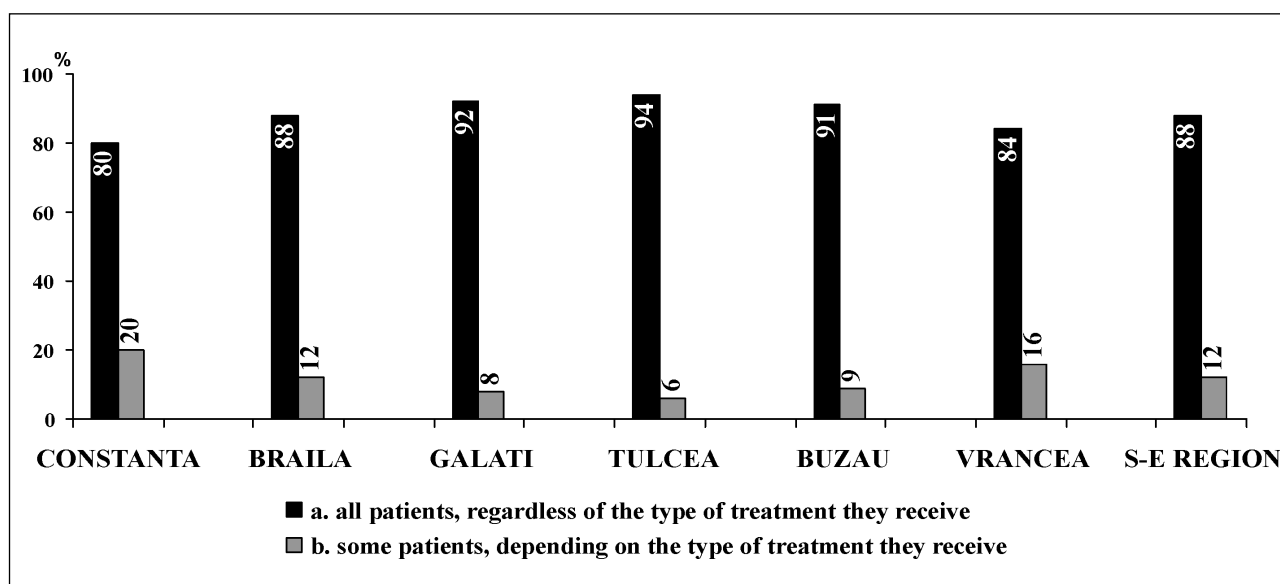


Figure 7. Answers to question 8: Do you perform periodic testing for the main diseases transmitted by blood? (Are you tested annually for hepatitis B and C and syphilis?)

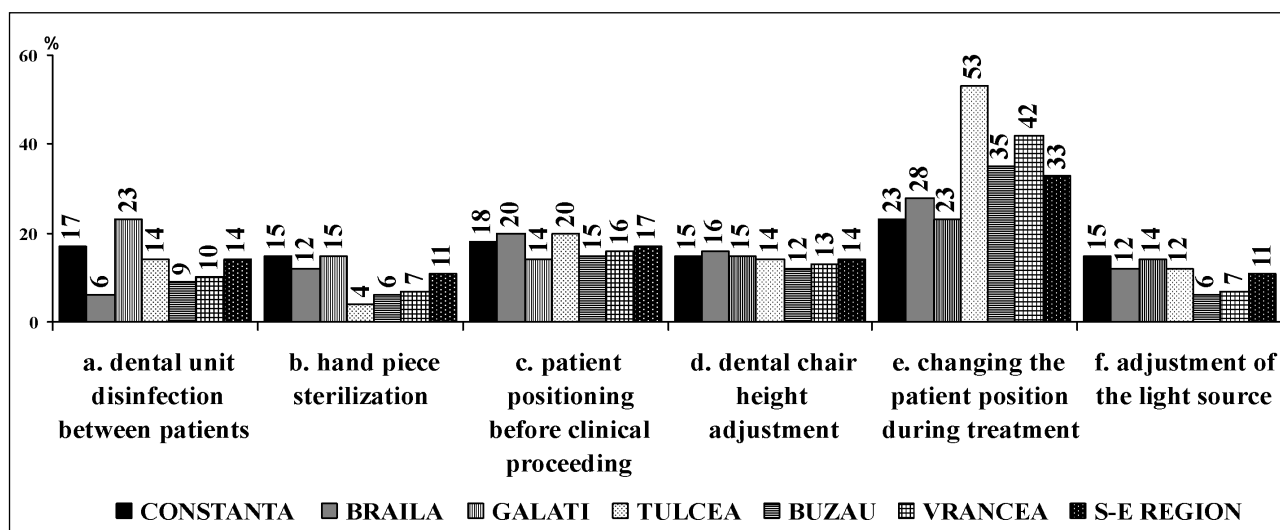


Figure 8. Answers to question 9: Which of the following activities do you believe are useless for the improvement of your office productivity?

ANOVA), the most positive responses coming from dentists in Tulcea and the least positive from those who worked in the Constanta and Galati districts.

At a regional level, the assessment of the use of different sterilisation methods (Q10) indicated that 204 (70%) of the dentists used dry-heat sterilisation (“Poupinel”), 194 (66%) used wet-heat sterilisation (autoclave), 31 (11 %) used both these methods, and only 15 (5%) used additional sterilisation methods (Figure 9).

The use of dry-heat sterilisers was not significantly different according to the subjects’ age, gender, and years in practice ($P>0.05$; ANOVA), but differed significantly according to the district, being most used in Constanta and the least in Galați.

The reported use of an autoclave differed significantly according to age. This method was most frequently reported as used by those aged 25-35 years and least often by those over 65 years ($P<0.05$; ANOVA). According to the district, it was most frequently used in Galati and least in Constanta. There was no significant difference according to the dentists’ gender and years in practice ($P>0.05$; ANOVA).

The reported use of both dry-heat sterilisation and the autoclave did not show differences according to the district, age, gender, and years in practice ($P>0.05$; ANOVA).

Regarding the additional sterilisation methods, their reported use was no different according to the age, gender, and years in practice ($P>0.05$; ANOVA), but was different according to the dis-

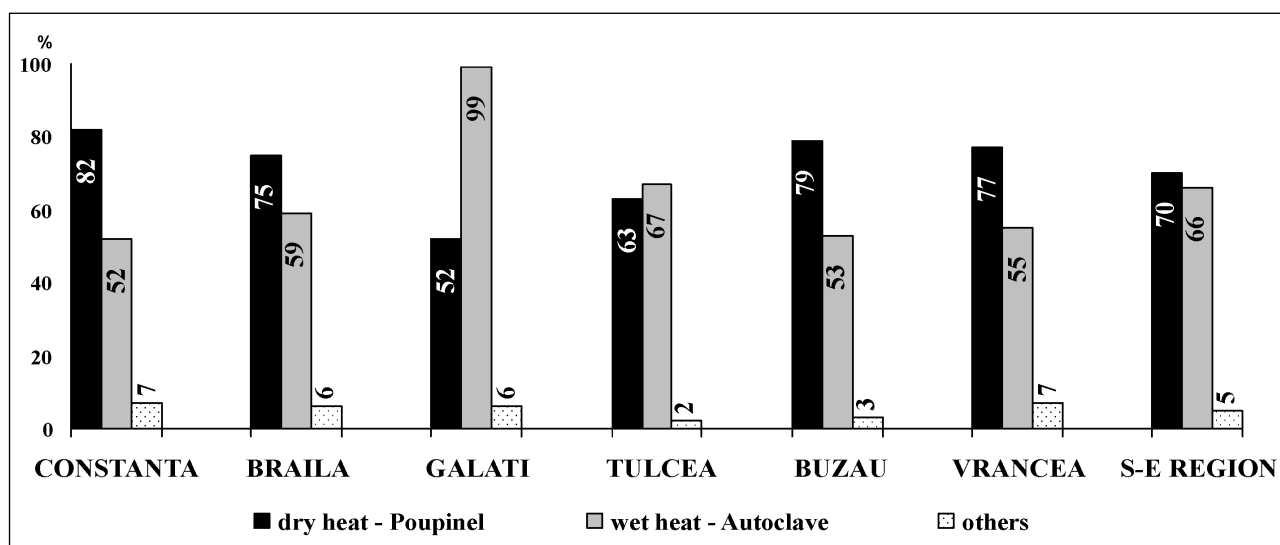


Figure 9. Answers to question 10: What sterilisation methods do you use?

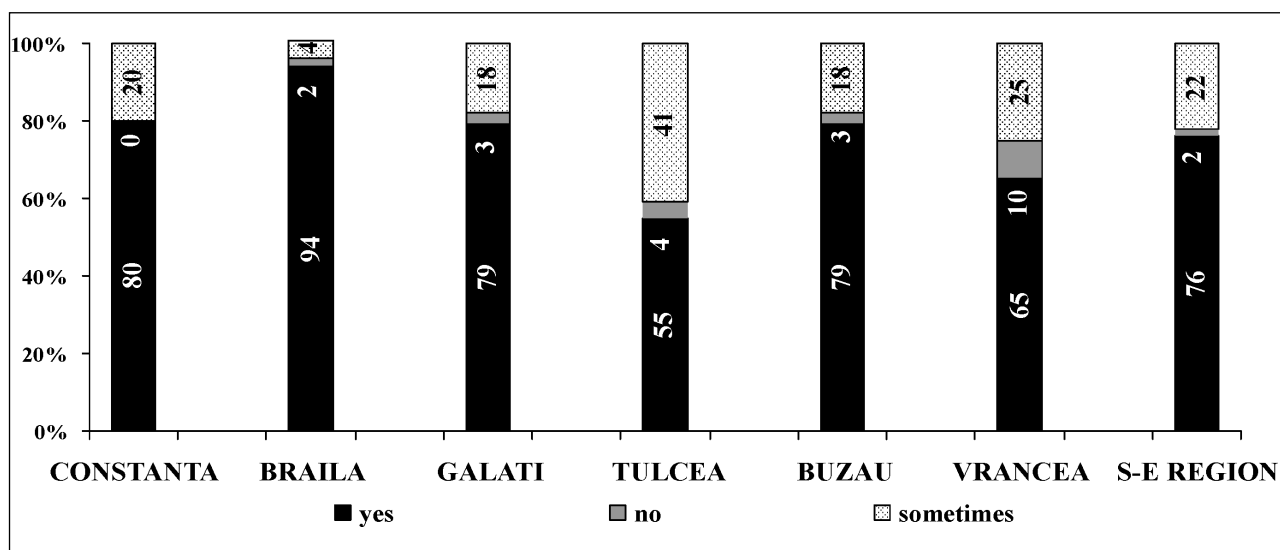


Figure 10. Answers to question 11: Individual personal protective wear (medical gown mask, gloves, eye protection) has to be the same.

trict ($P < 0.05$; ANOVA), most frequent in Braila, and least in Constanta and Galati.

At regional level, 258 (88%) of subjects believed that their personal protective wear (medical robes, mask, gloves and eye protection) had to be the same (total) for all patients, regardless of the treatment to be performed (Q11) and 34 (12%) believed that it was only necessary for some patients, depending on the procedure to be performed (Figure 10). These answers were no different according to the district, age, gender, and years in practice ($P > 0.05$; ANOVA).

Two hundred and twenty-two (76%) dentists considered that the patient must be informed regarding the specific measures for the prevention of infection transmission in dentistry, whereas 63 (22%) considered that this information had to be given only in some cases, and seven respondents (<2%) did not agree that it was necessary to offer this information to their patients (Q12, Figure 11). These answers did not differ significantly between respondents according to their age, gender, and years in practice ($P > 0.05$; ANOVA), but only according to the district, the most frequently posi-

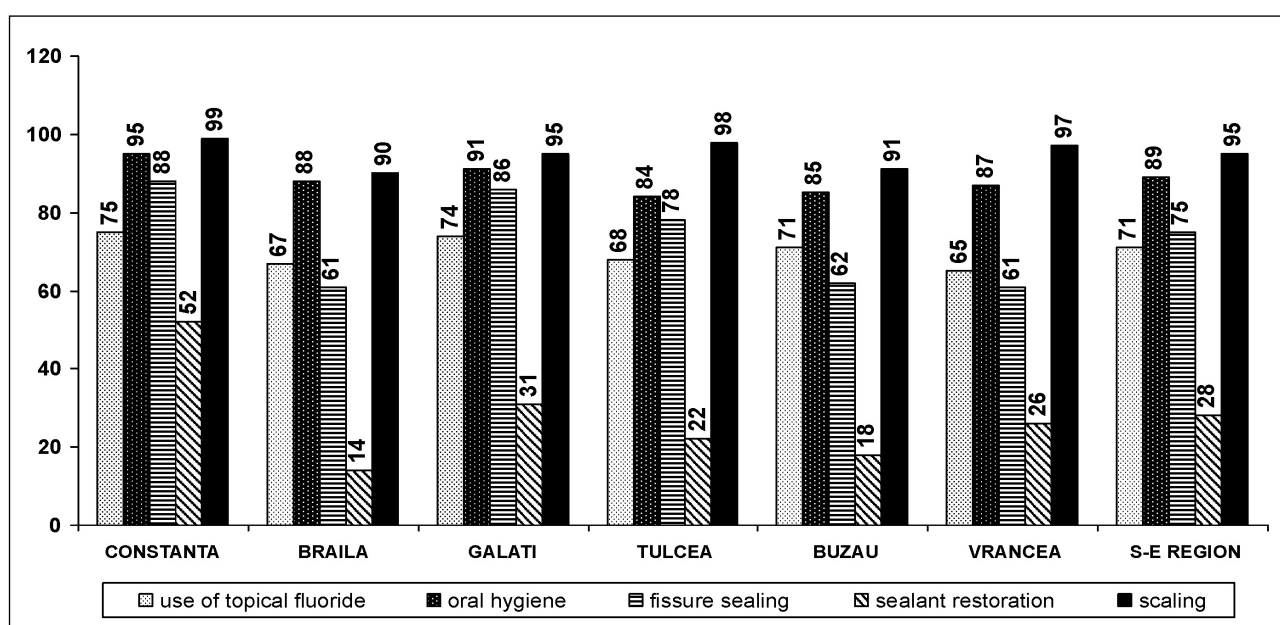


Figure 11. Answers to question 12: Do you consider that the patient must be informed regarding specific measures for infection transmission prevention in dentistry?

tive answers were given by dentists from Braila, and the least by those from Tulcea.

Discussion

Dentists and their employees should pay ongoing attention to all aspects of prevention in dentistry, including oral prophylactic activities and cross-infection control, in order to ensure safe practice for both dental staff and patients.

All treatments should be carried out in such a way that the risks of contamination for the dentist, patient, employees, and workplace are minimised. Some of the basic conditions for this are the organisation of the dental practice, the ergonomic layout of the practice, compliance with disinfection and sterilisation rules, and practice protocols to meet current legislation [5].

The needs for prevention in all aspects of dentistry in Romania are well documented. However, the poor oral-dental health of the Romanian population indicates that these needs are not being met [6-9].

The answers to question 1 suggest that there is a need for more training in preventive dentistry in all the districts that took part in this survey, even in the two university cities (Constanta and Galati) where lectures are available and the dentists have good access to them. The need for training in preventive dentistry appeared to be greater among those aged over 45 years, probably because the younger dentists have newer and fresher knowledge.

The results from this study indicated that delivery of dental health promotion and preventive dentistry services in the South-Eastern Romania Development Region are far from optimal. Although an overwhelming majority of dentists provide individual professional oral hygiene instruction, many other dental health promotion and preventive dentistry services such as fissure sealing and sealant restorations were reported as being provided infrequently, if ever, by the majority of those dentists who took part in the survey.

At a regional level, the frequency of delivering the preventive dental services decreased in the following order: scaling, professional oral hygiene instruction, topical application of fluoride, fissure sealing, sealant restorations. It may be that the finding that fissure sealants and sealant restorations were more likely to be provided in Constanta reflects the fact that dentists living in this area have easy access to continuing training at a dental

school.

As regards the delivery of dental prophylactic activities, routine activities such as scaling, oral hygiene instruction and topical fluoride application were more often provided by those dentists who were over 45 years of age (over 20 years in practice), whereas newer and more modern preventive measures such as fissure sealing and sealant restorations were predominantly provided by younger dentists (under 45 years of age, less than 20 years in practice).

However, it is worrying that among those treatments delivered most frequently, there were some dentists who claimed never to deliver such care. The number of dentists claiming never to perform basic preventive dentistry, such as scaling and oral hygiene instruction, is surprising given the importance of these procedures and, not insignificantly, the fact that these procedures are 100% covered by the National Insurance System for children under 18 years.

The less than 100% frequency with which some health promotion procedures and preventive dental care, such as scaling and oral hygiene instruction, are provided by dentists may, in some cases, could reflect delegation of such services to other members of the dental clinic staff, such as dental hygienists, to perform these services. However, it seems unlikely that this was an explanation because the number of dental hygienists in Romania is very low [10].

As regards the confidence of dentists in their ability to influence the risk of caries and periodontal diseases for patients, in all districts, with the exception of Constanta, the dentists who were interviewed tended to be more likely to believe that they could help their patients to avoid caries than periodontal diseases. The most positive answers to this question were given by the dentists from Constanta and, as previously suggested, this may be due to easy access to continuing dental education at the university.

Even though virtually 100% of dentists responded that they believed in the influence of tooth-brushing technique on the efficiency of plaque removal, the percentage of dentists that recommended a specific technique for each patient was lower throughout the region and irrespective of years in practice. Perhaps this difference can be explained by dentists' decreased confidence in cooperation and long-term patient compliance.

Unfortunately, irrespective of their years in

practice, more than half of the dentists responded that they were influenced in their clinical decisions by the concern for preventing the transmission of infection in possibly infected patients. Again, the lower number of negative answers was given by the dentists from Constanta. These results are even more worrying considering that 20% of dentists responded that they are not undergoing periodic tests for the main diseases transmitted by blood, including hepatitis B and C and syphilis. Similarly, the number of dentists who reported that they believed that activities such as dental-unit disinfection between patients and hand-pieces sterilisation were unnecessary is very concerning. Again, fewer inappropriate answers were given by dentists from Constanta and Galati.

The answers with regard to sterilisation methods were also disappointing. Even if wet-heat sterilisation was used by more than a half of dentists in all districts and mainly by young dentists (but least frequently in Constanta), dry-heat sterilisation was preferred by most practitioners, especially by the older ones. One of the reasons for this may well be the much lower price of dry-heat sterilisers. The percentage of dentists who responded that they believed that individual personal protection wear as to be the same for all patients, regardless of the treatment to be provided, was less than 100% and only about two-thirds considered that the patient must be informed regarding the concrete measures to prevent infection transmission in dentistry. These results reflect the urgent need to modify the responding dentists' knowledge and actions in the prevention of infection in dentistry, compliance with current legislation, and ensuring the health of the dental staff and patients.

In terms of the dental prophylactic activities and counselling procedures, the results of the survey were in accordance with the results of a previous study of Texan dentists [11]. Both studies found that most dentists gave instruction in correct tooth-brushing and removed plaque and calculus, but that they were less likely to apply fissure sealants, especially older dentists. The results of the study are also similar to those of a Finnish study, which found that fluoride varnish applications, sealants, and instruction in oral hygiene were the most commonly used preventive measures [12].

The infrequency with which sealant restorations were provided by the dentists who took part in the current study was similar to the findings of previous studies [13,14], which used a mailed ques-

tionnaire to dentists in Ontario, Canada. However, the percentage of dentists who responded that they applied topical fluoride was lower than that reported by a Brazilian study [1].

As part of infection control, dental care is an area of high priority regarding the risk of infections [15]. As many carriers (patients) are not aware that they are infected, the dentist has to consider every patient as potentially infected. On the other hand, health care workers are not only people who are susceptible to infections but they can also be sources of infections. In order to prevent infections, dentists and dental teams have to ensure that both they and their patients are protected. All dental personnel must be aware of their occupational risks and the measures to minimise them.

The present study showed that, even if the dentists who took part in the survey were fairly well equipped with sterilisation units, they had only moderate knowledge of infection control procedures and they needed to improve disinfection and sterilisation procedures in their dental practice.

Unfortunately, the results of the present study are in accordance with the results of other similar studies, the common conclusion being that there is still need for improvement in disinfection and sterilisation in dental practice and that dental staff should take part in advanced training courses on these topics. An Iranian study on dental professionals from the School of Dentistry, Shiraz University of Medical Sciences, Iran, showed that the use of standard isolation precautions was poor among the respondents and knowledge of infection-control measures and a positive attitude towards them alone did not have an impact on adherence to recommendations [15]. A study of dental workers from Genoa, Italy, highlighted some critical points in the management of infective hazards and prevention of cross-infection [16]. It reached a similar conclusion to that of a recent Czech study after evaluation of basic routines in prevention of cross-infection in dentistry, showing that dental personnel need to take part regularly in training courses on all aspects of infection control [17]. Regarding the use of the universal precautions, a recent study of Turkish dentists, showed that a higher percentage of respondents than in the current study stated that all patients have to be considered as infectious and universal precautions must apply to all of them [18].

In terms of using different methods for sterilisation, the current study obtained better results regarding the use of the "Poupinel" and autoclave

than two studies of dental health services in Africa [19,20] and produced results similar to those obtained in a recent Brazilian study [21] in terms of using dry heat as the main method for sterilisation. However, they are slightly lower than the results obtained in a study of UK dentists' use of autoclave [22].

In this context, improving the delivery of preventive dentistry in Romania requires a change in the mentality and ideas of both providers (dentists) and beneficiaries (the population). This shift can best be achieved through information campaigns, designed to heighten providers' awareness of the importance of delivering these services and to teach them how to maximise the yield of their health promotion efforts [23]. To ensure optimal implementation of these campaigns, dentists should receive specialised training in how to develop and manage efficient and effective preventive dentistry and cross-infection control.

Better knowledge of the different stages of preventive dentistry and infection control is needed; continuing education is required to correct and update the knowledge of dentists regarding prevention in dentistry, as has been shown in the present study, and also improve their compliance with recommended infection-control procedures. In addition, future studies are needed to determine the extent to which recent recommendations regarding the preventive services and infection control have been followed.

Within the limitations of any questionnaire study, the profile of the current working practices in prevention by dentists from South-Eastern Region of Romania revealed by the present study showed the need for a greatly increased emphasis on preventive dentistry in continuing education

courses. It seems likely that at present they are of a lower standard than in the majority of other European Union member states.

Conclusions

The results of this study demonstrate the need to increase the awareness and skills of dentists from the South-East Development Region of Romania regarding the prevention of oral diseases, especially in terms of cross-infection control in dentistry, in order to meet European Union standards and to ensure health and safety at work in dentistry.

Acknowledgements

This research has been funded from the Project "Management, Ergonomics and Dental Prevention in alignment with European Standards", Contract: POSDRU/81/3.2/S/55651, Strategic Project financed by the European Social Fund "Invest in people".

Contribution of each author

- CIN planned the conceptual model for the study and its design, applied questionnaires, contributed to the documentation, analysed the results, drafted and redrafted the paper, and approved the final version.
- CIA organised the administration of the questionnaires, contributed to the documentation, planned and supervised the study, critically reviewed its drafts, and approved the final version of the paper.
- SDP applied the questionnaires, contributed to the documentation, and checked and approved the final version of the paper.

Statement of conflict of interests

The authors of this article are not aware of any conflict of interests regarding this study.

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