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RESEARCH ARTICLE

Croatian Dentists Awareness about Stabilization Splint Therapy.

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ABSTRACT

Stabilization splint is frequently used therapy for temporomandibular disorders and bruxism. Few data exist regarding dental practitioners' behavior with stabilization splint therapy. The purpose of this study was to examine dental practitioners' awareness about occlusal (stabilization) splints. In this cross-sectional study, an online questionnaire was administered via e-mail to a dentists' database (Croatian). Questionnaire consisted of 22 questions which aimed to specify Croatian dentists' knowledge, attitudes and practice with occlusal and stabilization splints therapy. A total of 296 dentists filled out the questionnaire. Most frequent indications for occlusal splint therapy were bruxism (79.5%) and pain or disfunction of the temporomandibular joint (41%). Most of participants (49.4%) are using both soft and hard (acrylic) splints, 29.6% are using only acrylic splints, 15.8% are using only soft splints, while 5.3% is not certain about used occlusal splint material. Over 65% of participants responded that they do not know what is stabilization splint or that are not sufficiently informed about it. Still, 89.3% of participants recommend stabilization splints to their patients. Most frequent indication for occlusal splint therapy among Croatian dentist was bruxism. As most participants considered that they are insufficiently informed about stabilization splits there is a need for motivation and additional education about occlusal splint indications and therapy.
Keywords: postgraduate dental education; continuing education; occlusal splint; temporomandibular disorders; bruxism.

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INTRODUCTION

Temporomandibular disorders (TMD) is a collective term for a group of disorders that can affect the masticatory system [1]. As TMD represents collective term for heterogeneous group of disorders, there are multiple possible signs and symptoms that can occur. Sleep bruxism is a masticatory muscle activity during sleep that is characterized as rhythmic (phasic) or non-rhythmic (tonic) and is not a movement disorder or a sleep disorder in otherwise healthy individuals [2]. Sleep bruxism can lead to several signs and symptoms including tooth wear, muscular pain, limitation of jaw mobility and headache [3]. There are several types of treatments for TMD [4,5] and also for sleep bruxism [6], and occlusal splints are most frequently used [7-10]. Occlusal splint is defined as any removable artificial occlusal surface affecting the relationship of the mandible to the maxillae used for diagnosis or therapy [11]. Occlusal splints can have different design features, different materials and also can have various functional abilities [12]. Among several different types of occlusal splints, most frequently is used occlusal stabilization splint [13,14]. Beside that stabilization splint is most frequently used, there is a lot of diversity in its naming (Michigan splint, Tanner appliance, relaxation splint, Fox appliance), materials (hard, soft), fabrication techniques and indications for use, which makes confusion to patients and dental practitioners.

Although there were studies investigating dentists knowledge and factors influencing treatment decisions on bruxism and TMD and its types of treatment [15-23], still there is a lack of research about the decision-making processes and the usage of the stabilization splints by dental practitioners. The purpose of this study was to examine dental practitioners' awareness on occlusal stabilization splints and the way that stabilization splints are used in practice.

MATERIALS AND METHODS

This study was approved by the Ethics committee of the School of Dental Medicine, University of Zagreb, Croatia (05-PA-24-1/2018). Since this was an online questionnaire, standard written informed consent (participants signature) could not be obtained. Still, in order to begin with questionnaire, participants needed to confirm that they voluntarily participate in the research. Online questionnaire was administered to the dentists in Croatia, using School of Dental Medicine in Zagreb database of the registered doctors of dental medicine and dental offices. Confidentiality was guaranteed and questionnaire was anonymous – names nor IP addresses were not obtained. The online questionnaire was created and sent via the Google Forms® platform (Google, Mountain View, CA). Questionnaire had 3 parts; first part described purpose of this questionnaire, second part was confirmation of consent for participation in this research, and third part with 22 questions (Table 1) related to study. First five questions were related to participants socio-demographic data; next seven questions were about occlusal splints and had general character (questions about occlusal splints were modified from study by Candirli et al [17]); question 13 to question 20 were about the use of stabilization splints; last two questions were related to additional education about occlusal (stabilization) splints. If the participants answer on the 12th question ("Do you know what is stabilization/Michigan splint") was negative, questionnaire was finished for this participant. For analyzing the data descriptive statistics was calculated (SPSS 17.0, IBM Corp., Armonk, NY, USA).

RESULTS

Questionnaire was filled out by 296 participants. Two thirds of participants were female (197) and one third were males (99). Participants average age was 46.4 ± 13.1 years and the average year of graduation was 1996. ± 12.3. There were 29 (9.8%) specialists in Prosthetic dentistry, 13 oral surgeons (4.4%), 7 (2.4%) orthodontists, 4 (1.4%) specialists in periodontics, 3 (1.0%) in dental implantology and 2 (0.7%) in pediatric dentistry. Almost half of participants (147, 49.7%) worked in private practice, 66 (22.3%) in government health centers, 29 (9.8%) in polyclinics (also private), 21 (7.1 %) at University and 3 (1.0 %) in hospital.

Fifty-seven (19.3 %) participants answered that they do not use occlusal splints, while 239 (80.7 %) replied that they are using occlusal splints. Figure 1 shows distribution of the used materials for occlusal splints. Figure 2 shows the most frequent reasons for fabrication of occlusal splint.

Participants in present study recommend to patients with temporomandibular disorders most frequently to wear occlusal splint continuously (72, 31.6%) or up to 6 months (70, 30.7%); 36 participants (15.8 %) are not certain, 26 (11.4%) recommend occlusal splint wearing up to 1 year, and 24 (10.5 %) up

to 3 months. One hundred twenty-eight participants (53.1%) are not using additional therapy along with occlusal splints (when it is necessary), 76 use physical therapy (31.5%), and 69 suggest medication as supportive therapy to occlusal splints (28.6%). Ninety-eight participants (33.1 %) consider their level of knowledge about bruxism and temporomandibular disorders to be satisfactory, while 198 (66.9 %) as not satisfactory. On the question "Do you know what a stabilization splint is (i.e., Michigan splint)?" 96 (32.4 %) participants answered yes (I feel well informed), 171 (57.8 %) answered Yes (but I don't feel as informed enough), and 29 (9.8 %) answered No (end of the questionnaire). Figure 3 shows participants knowledge on indications for stabilization splint. Thirty (10.7 %) participants never recommended stabilization splint to patients, 179 (63.9 %) rarely, while 71 (25.4 %) indicated that they recommend it often; 44 participants (17.8 %) recommended up to 3 stabilization splints, 97 (39.3 %) up to 10, and 106 (42.9 %) more than 10. On the question "How often your patients complain of pain and/or sounds in the temporomandibular joint?", 203 (72.2 %) answered rarely, 76 (27 %) answered frequently, while 2 (0.7 %) answered never. Figure 4 shows participants answers for examination of patients with pain and/or sounds in TMJ. Thirty-three (11.8 %) participants answered that there is an age limit for fabrication of stabilization splint, 68 (24.3 %) were not sure and 179 (63.9 %) answered that there is not and age limit. Twelve (4.3 %) participants answered that stabilization splints cannot be used for diagnostic purposes, 118 (42.4 %) were not sure, while 148 (53.2 %) answered that it can be used for diagnostic purposes.

Participants in present study most frequently would recommend to patients with temporomandibular disorders to wear stabilization splint continuously (beside meal time; 121, 43.1 %) or only during night (113, 40.2 %); 43 (15.3 %) participants feel not well informed for giving such information to patients, and 4 (1.4 %) would recommend wearing only during day. On the question about attending any previous education about stabilization splints, 39 participants (13.9%) were not sure, 121 (43.1%) have attended, and 121 (43.1%) have not attended previous education. Most of participants (267, 92.7%) want to know more about stabilization splints while 21 (7.3) do not.

Table 1: List of questions of the questionnaire.

1.* Gender:
2.* Age:
3.* Year of graduation:
4.* Specialty (if yes, please identify):
5.* Place of employment:
6.* Do you use occlusal splints in your practice?
7. If you use occlusal splints, which type of material do you use?
8. If you use occlusal splints, what are the most frequent reasons for their fabrication? (You can choose several answers.)
9. If you employ occlusal splints for patients with temporomandibular disorders, how long do you recommend that patients wear them?
10. If you use occlusal splints, do you include additional therapy (when necessary)?
11.* Do you find your knowledge of bruxism and temporomandibular disorders satisfactory?
12.* Do you know what a stabilization splint is (i.e., "Michigan splint")?
13. What, in your opinion, are the indications for stabilization splints?
14. Do you recommend stabilization splints to your patients?
15. If you answered a) or b) in question 14, how many stabilization splints have you recommended to your patients so far?
16. How often do your patients complain that the temporomandibular joint is causing pain and/or making noise?
17. If you answered a) or b) in question 14, which of the following procedures do you perform?
18. Is there an age limit for stabilization splint application?
19. Can stabilization splints be used for diagnostic purposes?
20. When treating the symptoms of temporomandibular disorders, how frequent would you recommend patients to wear a stabilization splint?
21. Have you ever attended any kind of education about (stabilization) splints?
22. Would you like to know more about (stabilization) splints?

*mandatory questions

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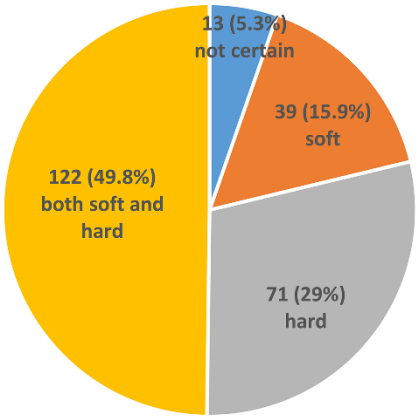

Figure 1: Participants answers on type of materials used for occlusal splint fabrication.

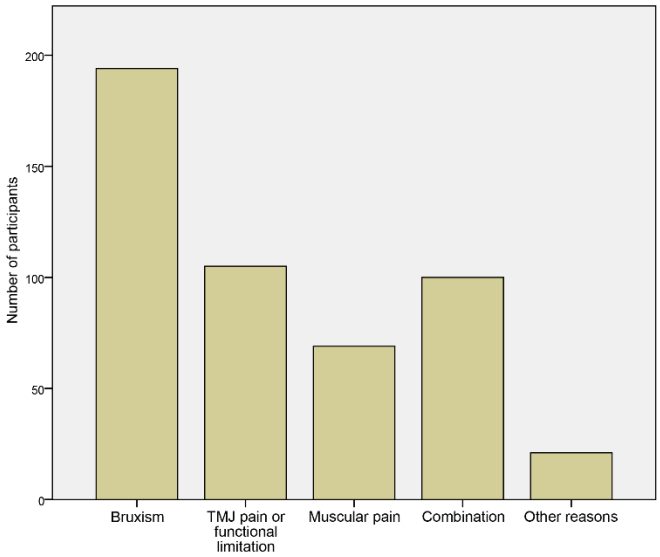

Figure 2: Most frequent reasons for fabrication of occlusal splint.

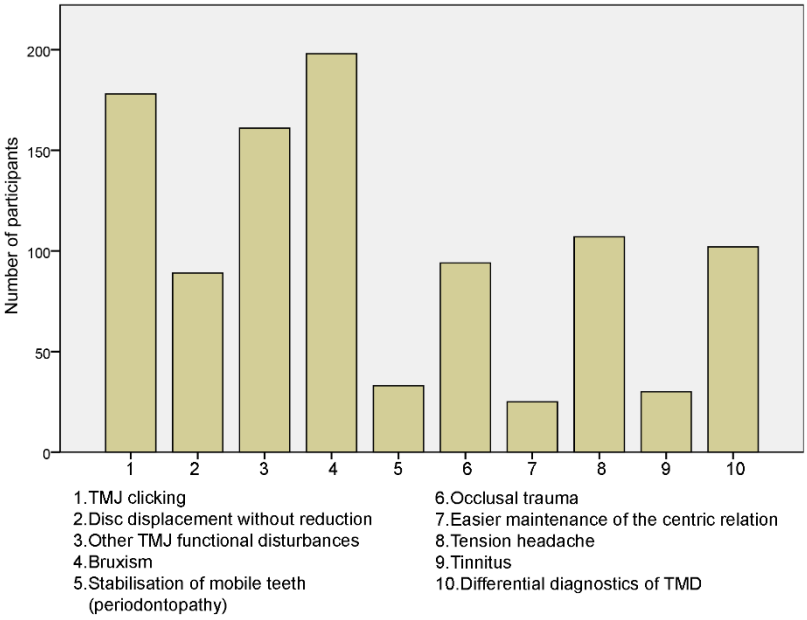

Figure 3: Participants answers on indications for stabilization splint therapy.

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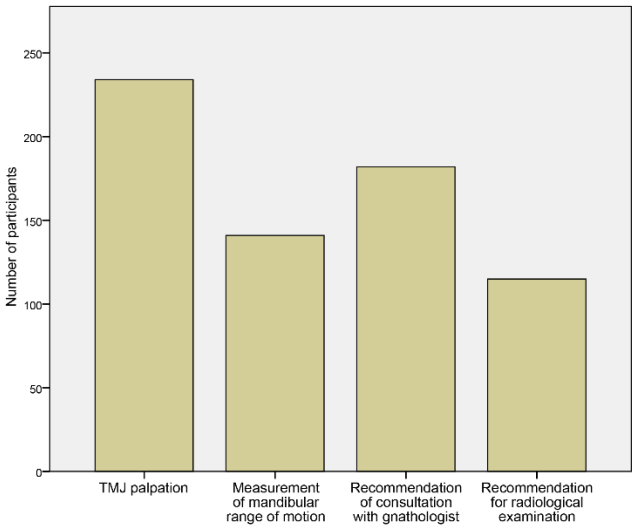

Figure 4: Participants answers on type of examination of patients with pain and/or sounds in temporomandibular joint.

DISCUSSION

Present study investigated Croatian dentists' awareness about occlusal splints, with emphasis on the stabilization splints. The most common indication for occlusal splints was bruxism. Over 65 % of participants responded that they do not know what is stabilization splint or that are not sufficiently informed about it. Nearly 90 % of participants recommend stabilization splints to their patients.

Gnauck et al investigated what kind of interocclusal appliances are chosen among Swedish dentists when treating TMD, and two most common reasons for occlusal splint fabrication were bruxism and headache [15]. While the bruxism as the most common reason for occlusal splint is in concordance with this research (Figure 2), second most common reason for occlusal splint production in present study was temporomandibular joint pain or functional disorder (Figure 2). Although headache was not offered as a response, it was possible for the participants themselves to write the most common reasons for treating with occlusal splints, and neither participant mentioned headaches. Beside different indications for occlusal splint fabrication, studies also determined different occlusal splint materials usage in different countries. For instance, study by Ommerborn et al [9] determined that 8 % of dentist (German North Rhine and the German Westphalia-Lippe) use soft splints, while most of participants (92 %) are using acrylic splints. Contrary to Ommerborn et al study [9], Gnauck et al [15] and Lindfors et al [16] showed that soft occlusal splints were more frequently used for bruxism and headache treatment and that treatment with soft occlusal splints is common in general dental practice in Sweden, despite the lack of scientific support for their efficacy and effectiveness. Study of Gnauck et al [15] and Lindfors et al [16], but also Ommerborn et al [9] are contrary to present study results (most Croatian dentist are using acrylic occlusal splints, Figure 1, which is in between Swedish and German dentist). Different results in different countries (Croatia, Sweden, Germany) can most easily be explained with different curricula. Despite there are studies that determined similar efficacy of soft splints in bruxism and TMD management [24,25], acrylic occlusal splints are generally considered as better option for treating symptoms of TMD and to prevent potential unwanted effects of bruxism [26].

Beside there are different treatment options for treating symptoms of TMD, occlusal splint is still the gold treatment modality for objective pain relief in patients with TMD [27]. Present study confirmed that occlusal splints are the most frequent treatment option for TMD and bruxism similar to Lindfors et al study [16]. Most participants considered that they are insufficiently informed about stabilization splints. Part of participant showed quality awareness of stabilization splints, while part of participants is not sure in stabilization splints using, which may be considered as close to findings of study by Candirli et al [17]. In a questionnaire study of Candirli et al [17] most participants self-evaluated their knowledge about bruxism and TMD as satisfactory, while questionnaire determined that knowledge of the dentists about TMJ disorders and occlusal splint therapy are insufficient. It is safe to conclude that current gold standard management for usage of occlusal stabilization splints in not completely present practice within dentists

population. With results of different studies [9,17,18] (Figure 3) it can also be concluded that there is a need for motivation and additional education about occlusal stabilization splint therapy for TMD and bruxism treatment. When discussing education about occlusal splints therapy it concerns curriculum as well. Several studies have shown that curricula for temporomandibular disorders are usually limited [20-22]. Investigation by Badel et al [23] confirmed these findings in two Croatian universities. But it should be pointed that insufficient student or dentist knowledge should not be attributed to different countries or curricula. Suggested readjustment of the dental curriculum towards increasing of clinical experience could expand knowledge related to basic TMD concepts [20]. Still, with TMD topic complexity and crowded curricula it is not realistic to expect that most of recently graduated dentists will engage in the treatment of TMD. In a study by Ziegeler et al [19] among German dentists, the vast majority of participants stated that they were interested in postgraduate courses in pain treatment, which is close to present study results (more than 90 % of dentists were interested to learn more about stabilization splints). Also, similar to study by Osiewicz et al [18] and Ziegeler et al [19] almost half of participants attended postgraduate training sessions (topic orofacial pain, TMD and its treatment). This trend could be used for improvement in knowledge about TMD and stabilization splints. Knowing that curricula for temporomandibular disorders are usually limited [20-22], postgraduate courses with topic of diagnosis and treatment of TMDs and stabilization splint could gain more prepared dentists.

CONCLUSIONS

Most frequent indication for occlusal splint fabrication among Croatian dentists is bruxism. Indications and types of occlusal splints differ between dentist in different countries. Most of practitioners are insufficiently informed about stabilization splint therapy. There is a need for motivation and additional education about stabilization splint indications and therapy.

Conflicts of Interest: The authors declare no conflict of interest.

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