https://doi.org/10.5272/jimab.2019253.2675

Journal of IMAB - *Annual Proceeding (Scientific Papers).* 2019 Jul-Sep;25(3)

Journal of IMAB
ISSN: 1312-773X
https://www.journal-imab-bg.org

Original article

QUESTIONNAIRE SURVEY OF FIXED CROWN PROSTHETIC TREATMENT IN CHILDREN

Mariana Dimova-Gabrovska[1], Desislava Dimitrova[2], Bozhidar Yordanov[1], Mariana Yankova[1], Todor Peev[3]

1) Department of Prosthetic Dental Medicine, Faculty of Dental Medicine, Medical University – Sofia, Bulgaria

2) Dental Clinic Edinstvo, Sofia, Bulgaria

3) Ex Deputy Rector of Medical University Sofia, Bulgaria, Private Practice, Sofia, Bulgaria.

ABSTRACT:

The fixed prosthetic treatment is a method with proven high efficiency in recovering of the three medio-biological indicators.

The purpose of the study is to investigate the use of laboratory crowns in children, in the daily practice of dentists in Bulgaria.

Material and methods: A source of information is a specially designed questionnaire. 767 dentists from all over the country are subjected to the research. The results are statistically processed using the methods of variation, comparison and correlation analysis.

Results: Dental practitioners aged 45-59 apply the laboratory crowns in childhood more often in their practice, with the largest share are those with speciality in general dentistry and in paediatric dentistry. Preferred materials for the construction of the crowns are ceramics, metal and resin.

Conclusion: There is a necessity to promote the indications, methods, means, advantages and disadvantages of prosthetic treatment with laboratory-made crown constructions in childhood.

Keywords: laboratory made crowns, application, childhood,

INTRODUCTION:

Tooth defects, due to caries and its complications, disrupt normal chewing and speech function, appearance and affect the growth and development of jawbones [1]. Deviations in sound articulation and aesthetics of the dentition may be the cause of psycho-emotional changes and disruptions in children's social development [2]. The recovery of severely demolished, due to caries, mechanical traumas and genetic diseases, children's teeth with conventional paediatric dentistry methods has some limitations [3]. The knowledge of specific indications, methods and means of prosthetic treatment with laboratory-made crown constructions in childhood improves the ability of the dental practitioner to carry out appropriate restoration of damaged tooth structures, according to the individual needs and requirements of the small patients [4].

In Bulgarian and foreign literary sources, the topic of the recovering of the highly destroyed teeth with pre-made crown constructions is actual and considerable [5, 6, 7, 8, 9]. Prosthetic treatment with preformed metal and pre-made zirconium crowns is characterized with high prophylactic value for secondary caries; with appropriate recovering of the occlusal articulation balance and the harmony in the smile of small patients; improvement in the psycho-emotional, social and physical development of children [1,10].

According to number of authors [11, 12, 13] the introduction of the CAD-CAM systems into dental practice greatly enhances the quality of the manufactured constructions. According to the latest scientific data [14], CAD-CAM crowns, veneers and micro-prostheses can be used in primary and permanent dentition. According to Stines [15], the various directions of computer-machine processing in pediatric prosthetic restorations are still under development and are of scientific interest. Currently there is no literature data in Bulgaria on the use of children's crowns made by digital design methods.

The aim of the present study is to evaluate the actual use of laboratory-made crown constructions in children in the daily practice of dentist in Bulgaria.

MATERIAL AND METHODS:

A sociological study of 767 randomly selected dentist is conducted from October 2017 to April 2018. Object of observation is the application of laboratory-made crown constructions in childhood.

A source of information is developed anonymous questionnaire, containing 15 questions, five of which provide information on the location of dental practice, gender, age, length of service and presence of specialty.

Two of the questions investigate the use of laboratory-madecrowns in small patients by the dentist:

1. Do you use laboratory-made crowns in childhood? ❑ Yes ❑ No

2. Please, specify what kind of laboratory-made crowns do you use in childhood:

The results are statistically processed with the packet of software programs for data analysis from epidemiological and clinical studies - SPSS for Windows, version 22.0.0. The methods of statistical processing used are: descriptive analysis, variance analysis, correlation analysis, queries for quantification of qualitative variables via chi-square and Fisher's precise (two-tail) test and multivariate analysis. MS Excel 2010 is used for graphical presentation of the results.

RESULTS:

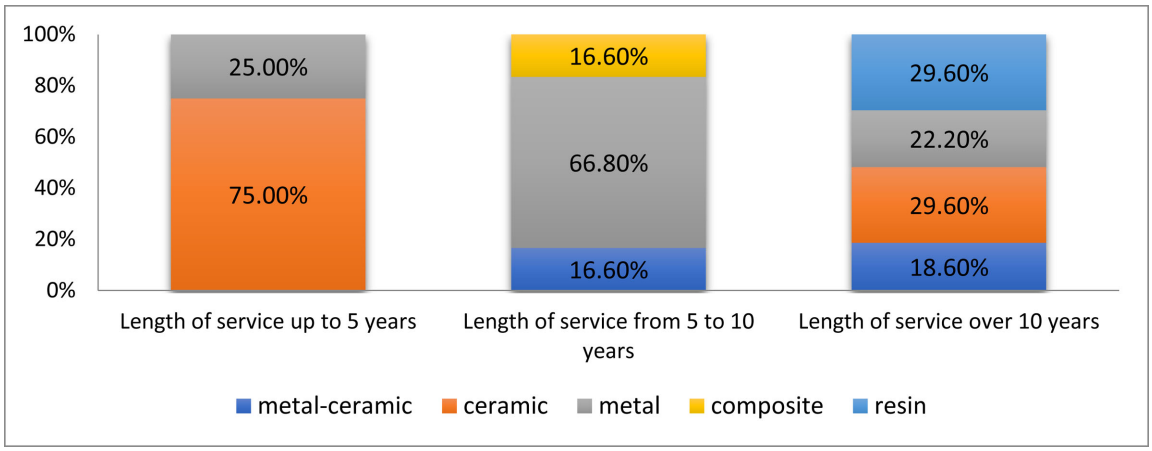
Of all interviewed dentists only 10,6% point out, that they use laboratory-made crowns in childhood. The choice of this kind of treatment depends statistically significant by the age factor. The relative shares of dentists in the age groups up to 44 and over 60 years of age are close and low (3.2% and 3.3%). Dentist in the age group 45-59 are more likely to use this type of prosthesis in children (8.8%) ($\chi 2 = 11.01$, $P = 0.004$). This distribution can be explained by length of service and relevant practical experience in prosthetic treatment as well as the level of knowledge of the modern materials. Dentist which have specialty are more likely to use laboratory-made crowns (7.0%) compared to those without specialty (4.0%) ($\chi 2 = 3.44$; $P = 0.048$). The largest relative share is represented by dentist with specialty in general dentistry (8.5%) and paediatric dentistry (8.2%).

Although there is no statistically significant difference, it can be assumed that resin crowns are preferred by the majority of dentist, aged 45-59 (33.3%), whereas those, who are over 60 have no specific preferences and equally use metal-ceramic crowns, metal and resin crowns.

From the gender perspective, there is also no significant difference. Data suggests that male dentist are more likely to use metal (44.4%) and ceramic (33.3%) restorations, while female dentist prefer resin (36.8%) and ceramic (26.3%) constructions.

Length of service of the dentist is a factor that influences statistically significant the choice of material for laboratory crowns ($\chi 2 = 16,71$, $P < 0,05$) (Figure 1).

Fig. 1. Distribution of dental practitioners according to length of service and type of material used for the laboratory crowns.



Those of the dentists with smallest length of service (up to 5 years) prefer to work with ceramic crowns (75%), while those with the greatest length of service except ceramic (29.6%) also use and resin constructions (29.6%). Dental practitioners with 5 to 10 years of experience indicate that they use metal crowns in their practice (66.8%). To a great extent, the choice of material for the manu-

facture of laboratory crowns depends on the experience and skills of the dental technician which is in collaboration with the dentist.

In the sample, analysis of usability of the veneers shows that this method of treatment is mainly applied by specialists up to 44 years (100%) with an experience of up to 10 years (80%) and is more frequent choice of male dentists (70%).

DISCUSSION:

Despite the increasing scientific interest in the application of the fixed prosthetic treatment in childhood, the literature data on the use of laboratory constructions in paediatric dentistry is still scarce.The foundedscientific sources [16, 17] testify to using of ceramic and metal-ceramic constructions, mostly in permanent dentition.An impression is made by Koch's [18] proposal for the prosthetic restoration of permanent teeth with golden alloy crowns. During the 5-year follow-up period it was found that all of the placed constructions had excellent marginal adaptation without gingival inflammation or secondary caries.

Literature data [19] also testify for the use of indirectly made ceramic and composite veneers in children suffering from molar-incisor hypomineralisation. Constructions successfully restore damaged aesthetics, have high resistance and require minimal reducing of the hard tooth tissues. No studies have been found for the use of crowns made by using the methods of digital design and machine milling.

After analysing the data, obtained from the study we conducted, it was found that only 10.6% of all respondents indicated that they apply or are applying prosthetic reconstruction methods with crown constructions in children. The obtained results, suggesting the rare use of this kind of recovery are confirmed by other scientific studies [20].

CONCLUSION:

With 95% confidence, it can be considered that in the whole dentist population in Bulgaria, those who indicate that they use crowns in children are within the range of 9.0% to 11.9% ninety-five percent confidence interval. All of this points out to the necessity to promote the indications, methods, means, advantages and disadvantages of prosthetic treatment with laboratory-made crown constructions in childhood.

REFERENCES:

1. Garg V, Panda A, Shah J, Panchal P. Crowns in peadiatric dentistry: a review. *J Adv Med Dent Scie Res*. 2016 Mar-Apr; 4(2):41-46.

2. Vulicevic Z, Beloica M, Kosanovic D, Radovic I, Juloski J, Ivanovic D. Prosthetics in Paediatric Dentistry. *Balk J Dent Med*. 2017; 21(10):78-82. [CrossRef]

3. Martos J, Nascimento C, Collares K, Silveira L. Trauma in permanent central incisor with crown fracture treated by direct restoration. *J Pediatr Dent.* 2013 Jun;1(1):24-26.

4. Waggoner W. Restoring primary anterior teeth. *Pediatr Dent.* 2002 Sep-Oct; 24(5): 511-516. [PubMed]

5. Dimitrov E, Georgieva M, Dimova-Gabrovska M, Andreeva R, Belcheva-Krivorova A. Preformed metal crowns as prosthetic restoration in pediatric dentistry. *J of IMAB.*2017 Jul-Sep; 23(3):1627-1632. [Crossref]

6. Korchagina V. [Methods of increasing the efficiency of restorations of primary teeth in small children.] *Clinical Dentistry.* 2005; 2: 4-9. [in Russian]

7. Yankova M, Uzunov T, Peev T. [Modified clinical-laboratory method for restoration of severely destroyed endodontically treated teeth.] *Dental Medicine*. 2010; 92(2):119-124. [in Bulgarian]

8. Cohn C. Zirconia-Prefabricated Crowns for Pediatric patients with primary dentition: Technique and cementation for esthetic outcomes. *Compend Contin Educ Dent.* 2016 Sep; 37(8):554-558.[PubMed]

9. El Shahawy OI, O'Connell AC. Succesful restorations of severely mutilated primary incisor using novel method to retain zirconia crowns-two year results. *J Clin Pediatr Dent.* 2016; 40(6): 425-430. [CrossRef]

10. Yang J, Mani G. Crowns for primary anterior teeth. *Int J Pedod Rehabil.* 2016; 1(2):75-78. [CrossRef]

11. Awad D, Stawarczyk B, Liebermann A, Ilie N. Translucency of esthetic dental restorative CAD/CAM materials and composite resins with respect to thickness and surface roughness. *J Prosthet Dent.* 2015 Jun;113(6): 534-40 [PubMed] [CrossRef]

12. Giordano R. Material for chairside CAD/CAM-produced restorations. *J Am Dent Assoc*. 2006 Sep;137 Suppl:14S-21S. [PubMed] [Crossref]

13. Miyazaki T, Hotta Y. CAD/CAM systems available for the

fabrication of crown and bridge restorations. *Aust Dent J*. 2011 Jun; 56 Suppl 1:97-106. [PubMed] [CrossRef]

14. Uzgur R. Is computer aided design-computer aided manufacturing including to Pediatric dentistry. *J Pediatr Dent*. 2014; 2(3):110-111. [CrossRef]

15. Stines SM. Pediatric CAD-CAM applications for the general practicioner. Part 1. *Dent Today*. 2008 Sep;27(9):130, 132-3. [PubMed]

16. Johnson W. Use of laminate veneers in pediatric dentistry: present status and future developments. *Pediatr Dent*. 1982 Mar;4(1):32-7. [PubMed]

17. Bural C, Oztas E, Ozturk S, Bayraktar G. Multidisciplinary treatment of non-syndromic oligodontia. *Eur J Dent*. 2012 Apr; 6(2):218-26. [PubMed]

18. Koch M, Garclea-Godoy Fr. The clinical performance of laboratory-fabricated crowns: Placed on first permanent molars with developmental defects. *J Am Dent Assoc*. 2000 Sep;131(9): 1285-90. [PubMed] [CrossRef]

19. Wray A, Welbury R, et al. UK National Clinical guidelines in Paediatric Dentistry. Treatment of intrinsic discoloration in permanent anterior teeth in children and adolescents. *Int J Paediatr Dent*. 2001 Jul;11(4):309-15. [PubMed] [CrossRef]

20. Threlfall A, Pilkington K, Blinkhorn A, Tickle M. General dental practitioners' viewson the use of stainless steel crowns to restore primary molars. *Brit Dent J*. 2005 Oct 8;199(7):453-5. [PubMed] [Crossref]

Please cite this article as: Dimova-Gabrovska M, Dimitrova D, Yordanov B, Yankova M, Peev T. Questionnaire survey of fixed crown prosthetic treatment in children. *J of IMAB*. 2019 Jul-Sep;25(3):2675-2678.
DOI: https://doi.org/10.5272/jimab.2019253.2675

Received: 14/02/2019; Published online: 29/08/2019

Correspondingauthor:
Assoc. Prof. Dr Mariana Dimova-Gabrovska, PhD, DSc.
Department of Prosthetic Dentistry, Faculty of Dental Medicine, Medical University, Sofia,
1, St. G. Sofiiski Blvd.,1431 Sofia, Bulgaria
e-mail: marianadimova@abv.bg