

ASPECTS OF THE CHOICE OF DENTAL MATERIALS USED IN THE TREATMENT OF SIMPLE CARIES IN TEMPORARY TEETH

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ABSTRACT

The aim of the study was to assess the choice made by dentists on restoration materials used in the treatment of cavities in temporary teeth and determination of factors that influence their choice. The study was conducted over a period of 6 months on 40 dentists from Iaşi. The evaluation was carried out based on a questionnaire with questions on the type of dental practice (especially if physicians practice predominantly pediatric dentistry), seniority at work, the type of material preferred in the treatment of Black classified cavities.

As regards to the type of dental practice, the results of the statistical analysis emphasize that 40% of subjects practice general dentistry and also pediatric dentistry, followed by those who practice only pediatric dentistry (35%). The analysis highlights that 37.5% of physicians use glass ionomer as filling material, 22.5% of them use only composite and 15% use both of them. The results of the study highlight the need for courses and workshops to facilitate the correct choice of restoration materials for temporary teeth cavities.

Key words: glass ionomer, compomer, compozit, temporary tooth

INTRODUCTION

In practice it is observed that many dentists have difficulty in choosing a filling material and a good technique in restoring temporary and permanent teeth. The last decade is characterized by a diversity of filling materials. Modified glass ionomer resins, composite resins, light cure glass ionomers, glass ionomers with silver particles, compomers became the materials of choice replacing amalgam and metal crowns.

The morphological particularities of temporary molars make them exposed to the risk of tooth decay. With the introduction of filling materials with reasonable price,

conservative techniques of restoration on temporary molars were favored, given the importance of temporary teeth in mastication and maintenance of the space for permanent teeth. Amalgam and adhesive materials, such as composite materials, modified glass ionomer cements, compomers are among materials used in restoring temporary molars [1].

The aim of the study was to assess the choice made by dentists on restoration materials used in the treatment of decays in temporary teeth and the determination of the factors influencing the choice of restoration materials. The present study corroborate the data of several practitioners with regard to the filling materials used in the dental

practice, in order to determine whether there is a certain type of material that can be called elective in the case of each Black class for temporary teeth.

MATERIAL AND METHODS

The study was conducted over a period of 6 months on 40 dentists from Iași, with various specializations, with different years of experience in dental practice, with the office location in urban or rural area. The evaluation was carried out, based on a questionnaire with questions on the type of dental practice (especially if physicians practice predominantly pediatric dentistry), seniority at work, the type of material preferred in the treatment of Black classified cavities. Another analyzed aspect was the preference in choosing restoration materials for each type of cavity after Black classification. Motivating the choice of materials and techniques, assessed in relation to the socio-economical and psycho-social level of patients, was another direction of research.

The descriptive statistical analysis was performed using SPSS 20.0 (statistical package for the Social Sciences). The determinations were made in relation to the

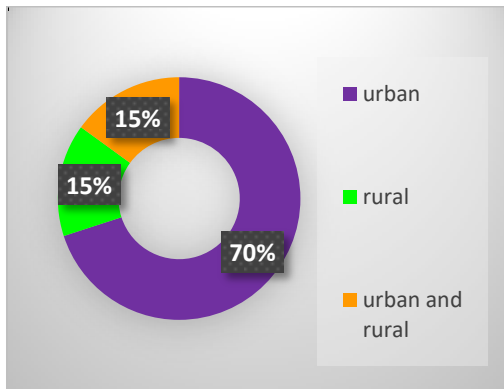


Fig.1. Fig. 1. Patients ' origin

Distribution of responses to the question "What percentage of your patients present dental cavities with class I Black ?" was the following: 75% of dentists said that 50-75% of children experienced class I Black lesions

seniority in dental practice of the subjects involved in the study.

RESULTS

The study group consisted of 40 dentists coming from the urban environment, 40% of the subjects were male. The mean age of the participants in the study was 34.6 ± 2.6 years. More than a half of the participants in the study declared a work age up to 5 years, followed by subjects with over 10 years experience (27.5%). As regards to the type of dental practice, the results of the statistical analysis highlight the fact that 40% of the subjects practice general dentistry and pediatric dentistry, followed by those who practise only pediatric dentistry(35%). Only 10% of subjects practice only general dentistry.

The location where dentists practiced dentistry was 95% of urban area. 70% of them declare that patients come from urban areas only, 15% of them have patients of rural area, the rest treating patients are from both areas. More than half of the dentists who participated in the study stated that over 75% of their patients are children, followed by doctors who have 50-75% of their patients children (Figure 1).

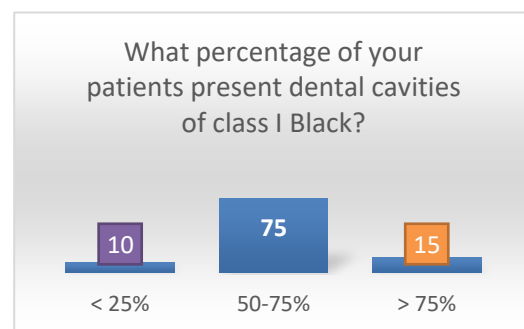


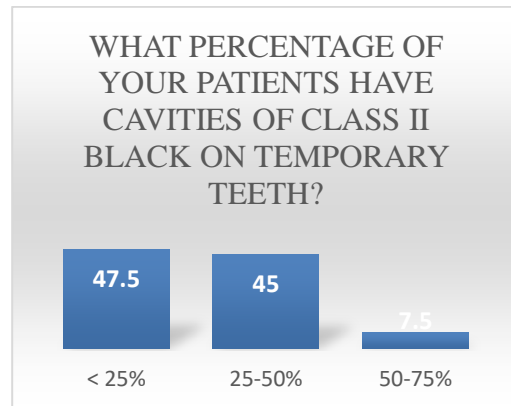
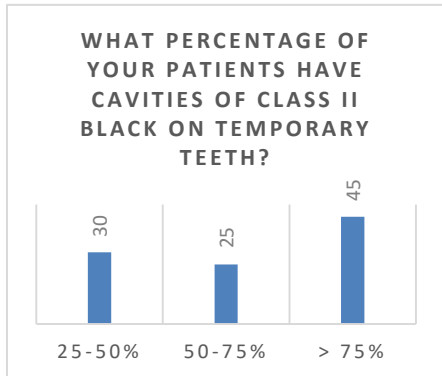
Fig.2. Percentage of patients with class I Black lesions

and only 15% of them have patients with 75% lesions of this type (Fig. 2).

Less than half of the dentists said that they have more than 75% of children with class II Black lesions (Fig. 3). The

percentage of patients with class III Black lesions is lower compared to other types of lesions, 47.5% of physicians stating that they

have less than 25% of patients with this type of cavities on temporary teeth (Fig. 4).



With regard to class IV Black, the results show that patients with this type of lesions have a lower frequency compared to class III Black lesions, 82.5% of dentists declaring a small number of children with this type of temporary teeth lesions. The percentage of patients with class V Black lesions is even lower. All participants in the study state that less than 25% of children have this type of lesion. In the case of class VI Black lesions, the lowest percentage values were recorded, with participants saying that less than 25% of children have this type of cavity.

by your preferences for each class of dental decay occurring in the temporary teeth - class I Black" highlights that 37.5% of dentists use glass ionomers as filling materials, 22.5% of them use only composite and 15% use both of them. Glass ionomer is considered the choice material for restoration by 59% of dentists participating in the study who practice dentistry for only 5 years. Dentists who practice for 5-10 years prefer to use more composite materials and compomer (54.5%), while physicians with more than 10 years of practice prefer the use of amalgam (42.9%) and equally composite and glass ionomer (28,6%) (Fig. 5).

Analysis of the answers to the question: "Specify the type of material used

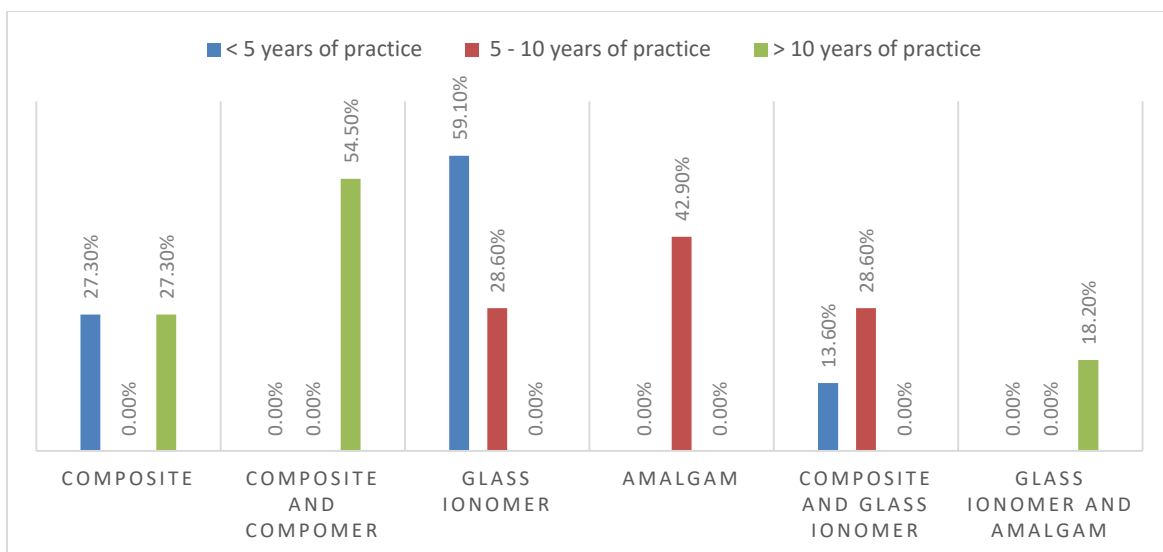


Fig. 5. Percentage of materials used for class I Black lesions by practitioners based on their experience in dentistry

In the treatment of class II Black decays, glass ionomer cement represents choice material for dentists up to 5 years of practice (68.2%), but also for those with up to 10

years of practice (71.4%), while physicians with more than 10 years of practice prefer to use the composite and compomers as filing materials (Fig. 6).

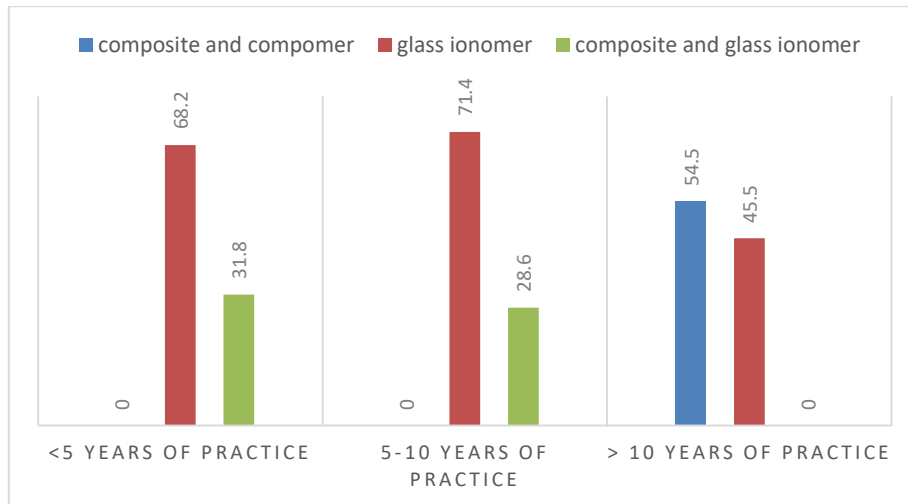


Fig. 6. Percentage of materials used for class II Black lesions by practitioners based on their experience in dentistry

For the treatment of third class Black lesions, 50% of physicians use composites and compomers, followed by physicians using glass ionomers (35%). The composite is used in a large proportion by dentists with practice of up to 5 years, while physicians over 10 years of practice prefer to use glass ionomers as filing materials of third class Black lesions. The IV-th class Black lesions are treated by 70% of doctors with composites, only 15% of physicians use glass ionomers and composites as restoration material. The composite is used in a large proportion by physicians with a practice of up to 5 years, followed by physicians up to 10 years of practice and over 10 years of practice. 42% of subjects with practice of up to 10 years use glass ionomer as restoration material. The treatment of class V Black lesions consists in the use of glass ionomers by 55% of the dentists. Composites and glass ionomers are used by 35% of participating physicians. Dentists with more than 5 years

of practice prefer to use glass ionomers while physicians with up to 5 years of practice prefer to use composites and compomers as filing materials. Almost half of participants use the composites as restoration material for class VI Black lesions, glass ionomers being the following material of choice in the treatment of these lesions. The question "Socio-economical and psychosocial level of patients prevents you from using your favorite materials in favor of other materials with weaker properties?" 75% of participants answered yes. The highest frequency of affirmative responses was recorded in physicians with a practice of up to 5 years and those over 10 years.

DISCUSSION

A similar study to the present one was conducted to update on the temporary teeth restoration materials, based on evidences. The authors, Dhar Vineet and Kuei-Ling Hsu, showed that amalgam did not cause changes in the central or peripheral nervous system. Also, composite restorations have had an amalgam-like success rate of over 90% over a period of 10 years, the use of digs greatly increases the longevity of the restoration. The authors conclude that there is solid evidence to support the use of composites in the treatment of Class I and II Black [2, 3].

The meta-analysis studies indicate that resin-modified glass-ionomer cements are more cariopreventive compared to composite materials [2, 4]. Modified glass ionomer cements, having the advantage of fluoride release, are described by the authors as being effective in treating temporary teeth, even more successful than conventional cements [5, 6]. In our study, glass ionomer is considered the material of choice for the restoration of temporary teeth cavities by 59% of physicians participating in the study who practice dentistry for only 5 years. Doctors with a 5-10 year practice experience prefer to use more composite and compomer materials (54.5%), while practitioners with over 10 years experience prefer the use of amalgam (42.9%) and the composite and the glass ionomer (28.6%). These results support the idea that continuing medical education courses are needed to provide relevant arguments for the use of a particular material, especially in the treatment of temporary teeth decay.

In the treatment of class II Black cavities, the glass ionomer is the material of choice for doctors with up to 5 years of practice (68.2%), but also for those up to 10 years practice (71.4%) , while dentists with more than 10 years experience prefer to use the composite and the compomer as restorative materials. The results of clinical trials indicate that they have better comparable

physical properties of conventional and modified glass ionomers, but without any difference in fluoride release [2, 7, 8]. In conclusion, the compomers can be used as restoration materials for the class I and II cavities in temporary teeth [9].

Restoring the frontal teeth in temporary dentition is a challenge due to reduced coronary volume, large pulp volume, thin enamel coating, low retention area, and child behavior [10, 11]. In our study for the treatment of Class III lesions, 50% of dentists use the composite and compomer followed by doctors using the glass ionomers (35%). The composite is used in a high proportion by physicians with a practice of up to 5 years, while doctors with over 10 years of experience prefer to use the glass ionomer as a restoration material for Class III lesions. Class IV Black lesions are treated by 70% of doctors with composite, only 15% of physicians using both glass ionomer and composite as restorative material (35%).

Cervical shaped class V Black cavities of temporary teeth are similar to those on permanent teeth. Due to the age of the children being treated and the difficulties of behavioral management, it is sometimes impossible to properly isolate the teeth as well as to apply the composite restorations [12]. In these cases, both conventional and modified glass ionomers are variants of choice in the treatment of these lesions [13].

In comparison to studies from North America, European dentistry faculties do not prefer amalgam as a filling material in the case of first and second cavities in temporary teeth [14, 15]. Compomers seem to have the greatest demand, but modern hybrid composites also play an important role in Western and Southern European universities. Composite microfibers, but also fluid ones are also used in most countries. Resin-modified CIS has been shown to be among the most commonly used materials in the restoration of primary molar cavities in northern European countries, equating

compomers in a 7-year period clinical study [5,16].

In this study, the use of dental materials for each type of cavity was evaluated, according to the Black classification, in order to guide the treatments with materials considered by choice for each cavity class.

In the class I Black, most doctors choose to use glass ionomer as an obturation material, followed by composite, and less often composite and compomer. Amalgam has been found among physicians' options, in few cases, with unimportant statistical significance (7.5% compared to 37.5 glass ionomers).

The statistics of our study showed that, in the case of Class II Black, glass ionomer material showed the highest demand (62%), both among doctors of up to 5 years of experience and for those with up to 10 years. This may be due to the most important advantage of the glass ionomer, the release of fluorine, which inhibits cavity growth and provides protection, especially when there is a contact point with a definitive tooth. Dentists with over 10 years experience have opted for the use of the composite and the compomer. Thus, it can be concluded that the glass ionomer is a material that suits the aesthetic and resistance requirements imposed by a class II cavity [17]. For class III cavities, the material with the most notable statistical significance was the composite, this being the option for 50% of the study participants. Experienced dentists for over 10 years have opted for glass ionomer as filling material. Considering the advantages of the composite, such as good aesthetics, the fact that it is repairable, but also the preservation of the dental structure, it is easy to see the physicians' tendency to use this type of material for the treatment of class III cavities [18].

In the treatment of Class IV cavities, the composite had a statistical significance of 70%, with only 30 percent

representing the cases where dentists opted equally for either the glass ionomer or the composite and glass ionomer. The considerations for which the composite materials have such a good reputation were mentioned above, where the use of the composites was statistically demonstrated for the treatment of the class III cavities.

The statistics produced determined that only 25% of doctors are influenced by the socio-economic and psychosocial levels of patients, when they have to choose a property of lower obturation in terms of their properties, to the detriment of the material they prefer. Of these, half said that the cost of work, using superior quality material, is the main reason for choosing a material other than the one they prefer in their practice. Taking these statistical data into account, it can be deduced that most of the participants normally use in their practice the materials that provided the best results, based on the experience of each and a small number of practitioners encounter cases where the quality of the work is influenced negative, mainly due to the high price of the material used [19].

CONCLUSIONS

It is important to note that the questioned participants were predominantly doctors with a dental experience of up to 5 years, which could be a relevant factor in the appreciation of amalgam obturations, a material that is used much less frequently, compared to the materials trying to replace it. Also, most offices where the study participants work are in urban areas, where both patients and patients' parents differ from those in rural areas concerning aesthetic demands, property that amalgam can not accomplish.

The results of the study highlight the need for courses and workshops to facilitate the correct selection of restorative materials for temporary teeth cavities.

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