

Educational Needs Assessment of Mashhad Dentists about Principles of Bonding and Adhesives in Dentistry

Background: many of the problems and composite filling failures are due to dentists' inadequate and passing acquaintance with bonding principles. The aim of this study is to assess dentists' acquaintance with the bonding principles and different adhesive application that are going to be used in educational programs.

Methods: in this descriptive and cross-sectional study, a valid and reliable questionnaire was designed. The questionnaires were distributed, in person, among dentists in Mashhad, 1389. Our random sample comprised 100 dentists; the questionnaires were filled, gathered and analyzed. The data and results are presented in tables and charts.

Results: the results of the study indicate that only 21% of the dentists in the sample have adequate knowledge and proficiency in total-etch adhesive application. This knowledge even reduces to 12% for self-etch adhesives.

Moreover, it revealed that just 8% of the dentists had enough information about the methods of connecting composite on Porcelain.

Conclusion: the results of this study indicate that in the majority of arenas we have questioned about, the rate of acquaintance and knowledge of the dentists were weak or moderate. All of the dentists believe that it is essential to hold bonding workshops.

Key words: Bonding, Adhesive, Educational Needs Assessment, Dentistry, Mashhad

دراسة مستوى الحاجة الى مباحث الالتصاق في طب اللسان عند اطباء اللسان العاملين في مدينة مشهد.

التصوير و الهدف: إن ألتير من المسائل الموتره في نجاح علاج اللسان عبر الكامپوزيت في عدم المعرفة الكافية عند اطباء اللسان في اصول استعمال هذه المواد. إن الهدف من هذه الدراسة هو معرفة مستوى علم اطباء اللسان في مجال الواسو و اصولها المستخدمة في طب اللسان و هذا عبر اجراء دراسة على اطباء اللسان في مدينة مشهد في عام ١٣٨٩.

الطوبى: في هذه المطالعة التوصيفيه المقطعية تم استخراجه استماره و اعطيت الى ١٠٠ طبيب انسان بشكل عشوائى و بعد ذلك استخدمت القوانين الإحصائية في تنظيم المعلومات .

النتائج: اشارت هذه الدراسة الى أن ٢١% من اطباء اللسان كان لديهم الخبرة الكافية في مجال استعمال ادهيزيو كوتال H . و انخفض العدد الى ١٢% في مجال ادهيزيو سلف H و اشارت الدراسة الى أن ٨% من اطباء اللسان كان لديهم معلومات كافية عن أساليب اتصال الكامپوزيت بالبورسلن .

الإستنتاج: اشارت نتائج هذه الدراسة الى أن مستوى المعرفة كان بين الضعيف و المتوسط لدى اطباء اللسان و لذا من الضروري ايجاد محاضرات تعليمية في هذا المجال.

الكلمات الرئيسية: الالتصاق، ادهيزيو، دراسة الحاجة التعليمية، طب اللسان، مشهد.

نیاز سنجی مباحث چسبندگی و باندینگ دندانپزشکی در دندانپزشکان عمومی شاغل مشهد

زمینه و هدف: بسیاری از مشکلات و شکست های ترمیم های کامپوزیت به دلیل عدم آشنایی کافی دندانپزشکان با اصول باندینگ می باشد. هدف از این مطالعه بررسی میزان آشنایی دندانپزشکان شهر مشهد در سال ۱۳۸۹ با اصول باندینگ و کاربرد ادهیزوهای مختلف جهت استفاده در برنامه ریزیهای آموزشی می باشد.

روش: در این مطالعه توصیفی-مقطعی پرسش نامه ای روا و پایا تهیه شده و بصورت حضوری در اختیار ۱۰۰ نفر از دندانپزشکان براساس نمونه گیری تصادفی در سطح شهر مشهد در سال ۱۳۸۹ قرار گرفت. پرسش نامه ها بعد از تکمیل جمع آوری شده و اطلاعات حاصل از آنها در قالب جداول و نمودارها توصیف شد.

یافته ها: نتایج این مطالعه نشان داد که تنها ۲۱٪ از دندانپزشکان مورد پرسش تسلط و دانش کافی در مورد کاربرد ادهیزوهای توتال اچ دارند. در مورد ادهیزوهای سلف اچ این میزان به ۱۲٪ کاهش می یابد. همچنین این مطالعه نشان داد که تنها ۸٪ دندانپزشکان اطلاعات کافی در مورد روش هایی مانند اتصال کامپوزیت به پرسنل دارند.

نتیجه گیری: نتایج این مطالعه نشان داد که در اکثر زمینه های مورد پرسش، میزان شناخت و آگاهی دندانپزشکان بین رده های ضعیف تا متوسط قرار می گرفت. تمامی دندانپزشکان برگزاری کارگاه باندینگ را لازم و ضروری می دانند.

واژگان کلیدی: باندینگ، ادهیزو، نیازسنجی آموزشی، دندانپزشکی، مشهد

مشهد مقدس میں ڈینٹل ڈاکٹروں کے لئے بائیونڈنگ کے مسائل پر توجہ دینے کی ضرورت.

بیک گراؤنڈ: ڈینٹل علاج کے دوران کامپوزٹ شکست و ریخت کے مسائل ڈینٹل ڈاکٹروں کے بائیونڈنگ کے اصول سے ناواقف ہونے کی بنا پر سامنے آتے ہیں۔ اس تحقیق کا هدف مشهد مقدس میں ڈینٹل ڈاکٹروں کی بائیونڈنگ مختلف طرح کے سرجیکل گوندوں (ایڈہیزوز) کے استعمال کے بارے میں ڈینٹل ڈاکٹروں کی واقفیت کا جائزہ لینا ہے۔ یہ تحقیق دو ہزار دس میں انجام دی گئی تھی۔

روش: اس تحقیق میں ریٹمڈ طریقے سے ایک سو ڈینٹل ڈاکٹروں کو سوالنامے پیش کئے گئے۔ سوالوں کے جوابوں کو ٹیبلز اور گراف کی صورت میں پیش کیا گیا۔

نتیجے: اس تحقیق سے پتہ چلا ہے کہ صرف اکیس فیصد ڈینٹل ڈاکٹروں کو مختلف طرح کے ڈینٹل گوندوں کے بارے میں معلومات تھیں۔ سلف ایچ اڈہیزو کے بارے میں معلومات کی شرح بارہ فیصد ہے۔ اس تحقیق سے پتہ چلتا ہے کہ صرف آٹھ فیصد ڈینٹل ڈاکٹروں کو کامپوزٹ کوچیکانے کے بارے میں معلومات تھیں۔

سفارشات: اس تحقیق سے پتہ چلتا ہے کہ اکثر سوالوں کے بارے میں ڈاکٹروں کی معلومات بہت کم ہیں۔ تمام ڈینٹل ڈاکٹروں نے بائیونڈنگ ورک شاپ کو ضروری قرار دیا ہے۔

کلیدی الفاظ: بائیونڈنگ، ایڈہیزو، کری کولیم ضرورت، مشهد مقدس۔

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INTRODUCTION

Programming to upgrade the healthiness through upgrading the dentists' abilities requires continuous training and educational programs after dentists' graduation. These trainings should be according to the dentists' needs and professional occupation.

Since a great deal of time and money should be spent on training and education, the vocational training should be provided after needs assessment, also it should offer the best solution for the attendees' problems. These trainings could enhance dentists' abilities. The studies indicate that after a ninety-minute lecture for a group of dentists the bond firmness of sample teeth have been improved up to 15% to 150%.

Conducting the educational needs assessment is the first step in programming; actually it is the preliminary and contributing factor to provide the practical and influential training. Carrying out needs assessment helps us to determine the urgent needs which are the basis for setting the objectives and organizing the major resources (human, finances, materials).

It has been indicated that the educational programs provided after graduation are successful and motivating only if they cover the real needs of the attendees.

There are various different reasons to acquire vocational trainings. The educations should be according to the rapid development of technology and science. In dentistry, tooth restoration is an important and general activity. There are different methods of repairing the teeth, one of the newest methods is bonding and adhesive, nowadays using tooth-colored bonding material is very common and popular.

Different generations of adhesive systems (first to seventh generations) have left dentists bewildered due to various kinds of resin cements, cases of prescriptions and different applications of the material. The rapid extension and development of information and technology in this field has brought some problems for the graduated dentists in administrating the best dental treatment. In fact, one of the major reasons of treatment failure is the lack of knowledge about bonding materials and their applications. The study shows that identifying the new generations of composites (tooth colored restorative materials) and adhesive materials are the major priorities of dentistry education requirements. One of the other reasons for establishing the educational needs of dentists is that the expertise acquired during education is not applied practically. Moshref et al indicated that in the field of Prosthodontics, dentists' awareness level decrease as the number of years after their graduation increase.

The goal of this research is to conduct needs assessment and quantify the knowledge level of dentists of Mashhad in 2010 (1389). Principles of bonding, different generations of composites, and the rate of use of composite for tooth restoration are the main criteria for planning an influential educational program for health.

METHODS

In this descriptive and cross-sectional study a list

comprising all the dentists working in Mashhad was compiled by Medical Council. There were 420 people in the list who worked in 6 regions of the municipality of Mashhad. A representative sample of 100 dentists was taken. The samples were selected randomly according to the numbers of dentists in each region.

A questionnaire was provided according to the effective guidelines for developing the bonding. The form included 17 questions. 7 questions were about the application and different bonding principles, adhesion, and the essential conditions for bonding firmness; the dentists were supposed to check 1 to 10 according to their level of acquaintance with each issue (1 shows the least familiarity and 10 shows the most). It was explained for them that 1-3 is representative of weak knowledge, 4-7 of mediocre and 8-10 shows good knowledge. There were 9 multiple-choice questions (with four to five options) and one question was about the need for holding bonding workshop. The validity of the questionnaire was determined by 3 experts in restoration. The reliability was determined by test-retest method, 10 dentists took the test for the second time after two weeks, and the reliability of multiple-choice questions was confirmed. (All of the questions)

Questionnaires were taken to the office or clinic of each dentist in person by a senior dental student; and sufficient explanations were provided for the dentists about the research, its advantages and necessities. To ensure confidentiality, the data were collected by courier. The results and data were analyzed by tables and descriptive statistics.

RESULTS

All the questionnaires were gathered (100).

In the first part including dentists' assessment of acquaintance with topics related to bonding, the scores indicated that their acquaintance was not good; the dentists have assessed their knowledge weak in some cases such as metal connection and guide to the interpretation of the producers. (Table 1)

The results show that silver or gold restorative materials are used more often than tooth-colored one in dental restorations, about 10 to 20 restoration of each material are used during a week. (Table 2)

The tooth-colored restoration broke more easily than metal fillings, however the rate of breakings were a few. (Table 3)

Most frequent cause of treatment failure in composite is decay (75%), the other reasons include marginal discoloration (16%), the quantity of bonding (5%), and allergic reaction (4%); there is no report about the pile of composite fracture.

In amalgam restoration case the breakage is about (59%), amalgam fracture (21%), decay (19%), and allergy after treatment (1%), respectively.

According to the results, most of the dentists (51%) "rarely" place posterior composite restorations. Many of them "sometimes" (40%) use posterior composite restorations, a few of the dentists "often" (5%) or "never" (4%).

| Table 1. the frequency of dentists' replies to their acquaintance with the topics related to bonding and adhesion | | | | |
|--|-------------|-----------------|-------------|------------------|
| Frequency of the replies | Weak | Mediocre | Good | No answer |
| Bonding application of total-etch | 12 | 67 | 21 | - |
| Bonding application of self-etch | 11 | 77 | 12 | - |
| Bonding and adhesive principals | 7 | 69 | 24 | - |
| Conditions of bonding increase | 4 | 60 | 36 | - |
| Conditions of ceramic bonding increase | 15 | 77 | 8 | - |
| Conditions of metal bonding increase | 35 | 63 | 1 | 1 |
| Guide to the producer's interpretation | 45 | 51 | 1 | 3 |

| Table 2. the frequency of dentists' replies to the rate of restorations during a week based on the materials | | | | | |
|---|--------------------|----------------|-----------------|---------------------|--------------|
| Frequency of the replies | Less than 5 | 5 to 10 | 10 to 20 | More than 20 | total |
| Number of composite restoration during a week | 3 | 27 | 63 | 7 | 100 |
| Number of amalgam restoration during a week | 1 | 11 | 67 | 21 | 100 |

| Table 3. the rate of restoration break according to the materials | | | | | |
|--|--------------|---------------|------------------|--------------|--------------|
| Frequency of the replies | Never | Rarely | Sometimes | Often | Total |
| Composite restoration break | 4 | 90 | 6 | 0 | 100 |
| Amalgam restoration break | 21 | 76 | 3 | 0 | 100 |

Most of the dentists used the fifth generation of bonding (79%); some of them use the seventh generation of bonding (12%), the sixth generation (6%) and the fourth (3%) are used less.

About (44%) of the dentists purchase bonding based on the knowledge and materials acquired during seminars and congresses. Advisory and consultation with colleagues plays a crucial role in such decisions (39%). About 10% of them read the magazines and 7% studied the reference books.

As the dentists were asked about the necessity to hold bonding training workshops, 80 percent of them checked numbers 8,9,10 and 20% said 5, 6, and 7.

DISCUSSION

The first step to devise continuous education, for improving health, is conducting needs assessment. Continuous education has to be motivating; and a method to increase motivation is cooperation, we should look for the attendees' real needs.

The poll confirmed that the major reason for attendees' dissatisfaction about training workshops was failure to comply with the profession of the attendees. The problem is that the contents of educational programs are devised only by the experts of the major and the participants' needs are not considered.

There are various different methods to conduct needs assessment, each of these methods have their own special objectives, applications and conditions. Some of the famous methods of needs assessment are mentioned below:

Job analysis, task analysis, devising a qualified employee sample, performance appraisal, samples of work, group discussion, self-assessment, and using data-gathering tools such as questionnaire or interview.

The major advantage of questionnaire is that we can save time and money; moreover, we can generate extensive data from different people. The other benefit is that the data could be analyzed easier than other methods.

Many and various researches have distributed questionnaires in order to conduct needs assessment.

On the condition that the participants could be assured of remaining respectively anonymous, they answer the questions more carefully (6). Therefore, the questionnaires were distributed in person by a student who explained the objectives and advantages of the study for the dentists. The questionnaires were collected by courier.

The studies have showed that as the years of graduation increases, the knowledge decreases and the average of the scores worsens (15, 16). Owing to this reason, participating in continuous education is obligatory in most of the European countries.

Tooth restoration is a significant part that occupies many of the dentists. Salami et al indicated that professional and continuous education for dental restoration is a training priority in Fars province.

This priority has been reported as the major and urgent need of dentists in other places, as well (19, 20). Our research showed that most of the dentists have confirmed that their acquaintance with adhesive dentistry is not good. This problem even rises in self-etch bonding which is a new category. These results represent that dentists have not kept up to date during their education. They were asked about their methods of obtaining information and purchasing the material, the results presented that they mostly consulted with their colleagues and did not study academic magazines or materials which is a prominent problem that should be solved.

Even 45% of the participants could not utilize the brochures of adhesive systems; only 1% of them had this skill. This problem could be due to lack of English knowledge or weakness in interpretation because of not teaching and learning adhesive principles fundamentally. The answers of questions 8 and 9 showed that the rate of composite restoration and amalgam restoration were similar during a week. Almost 63% of the dentists placed 10-20 composite restoration in a week; 67% of them used 10-20 amalgam during a week. These results show that dentists do not have sufficient acquaintance with adhesive, self-etching primer adhesive systems so special attention should be given to this problem. While 49 % of Australian dentists declared that they have used amalgam restoration less during the last 5 years (21).

On average, failure of amalgam restoration is less than composite; therefore, the tooth-colored composites are

more sensitive.

However, 6% of the dentists said that they never or seldom face failure in composite restoration, according to the other questions, composites were more probable to break. This contradiction might be because of the little professional experience or working in different clinics.

45% of the dentists often or always use composite for posterior teeth, and only 4% of them did not use composite at all to repair posterior teeth. It shows that tooth-colored materials are used vastly; in a study, it is represented that 95% of dentists in England use composite to repair posterior teeth (22). Also in America there are similar results (23).

79% of the dentists use etch and rinse adhesive composite (the fifth generation) for dental restoration; the three-step total-etch adhesive were used the least. It was predictable as the fifth generation was newer; studies carried out in Australia show that 85% of the dentists use total-etch adhesive (21). Since the self-etch adhesive are new, they might be used less by the dentists. Because of this reason there should be some training classes for such cases.

Dentists were asked to express their opinion about holding bonding workshops to become familiar with bonding principles and adhesive application. There were supposed to score between 1 to 10, and all of them scored above 5. 80 % of them selected 8,9,10 which presents that all of the dentists believe holding the workshop are essential.

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