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International Journal of Esthetics and Restorative Dentistry

Original Research

Knowledge on Clinical Criteria for Evaluation of Dental Restorations Among Dentists – A Questionnaire Survey

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How to cite: Varshitha Y. Knowledge on clinical criteria for evaluation of dental restorations among dentists. Int J Esth Res Dent. Volume 2022, Article ID 22166224, 7 pages.
DOI: https://doi.org/10.56501/intjesthresdent.2022.726

Received: 30-09-2022 *Accepted: 18-10-2022* *Published: 28-10-2022*

Abstract

Introduction: Federation Dentaire Internationale (FDI) have formulated criteria for quality assessment of restorations and serve as a guideline to determine if a restoration needs refurbishment, repair or replacement.

Aim: To evaluate the knowledge on clinical criteria for evaluation of dental restorations among dentists.

Materials and Methods: A cross-sectional questionnaire survey was conducted among 100 dentists. On receiving consent, the participants were asked to answer 10 closed-ended questions. The questions were designed to analyze their knowledge about FDI criteria and its advantages in assessing a restoration using a pre-piloted questionnaire.

Result: 51% of participants were aware of FDI criteria, 45% were aware of Ryge's criteria for evaluating the restorations and 4% knew both Ryge and FDI criteria. 58% were not trained for assessing the restorations. 80% population believe that criteria should be followed for evaluation of restoration which gives a positive scope for this system.

Conclusion: Within the limitations of the study, it was concluded that all the dentists were aware of the clinical criteria for assessment of dental restorations. Almost half of the dentists were not trained to use the clinical criteria. The dentists practising the criteria identified reliability as the reason for practising. Lack of knowledge and training was the major reason among the dentists not practising.

Keywords: *FDI criteria; Dental restorations; Replacement; Quality; Training.*

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INTRODUCTION

Dental restorations are the one most commonly done treatment in dentistry. Every restorative material has its own properties. Long term prognosis is affected by the appropriate choice of restorative material and its application as indicated by the manufacturer. Considering the fact of emergence of various new dental materials, assessment of the dental restoration is important for quality assurance in dental office [1]. The evidence based on clinical follow up will benefit the clinicians to make a choice. Significant step has to be taken to improvise the knowledge about the dental restoration. FDI approved a clinical criterion to assess restoration quality in the year 2007. This article on restoration evaluation was published in the Journal of Adhesive Dentistry [2] and also in the Journal of Clinical Oral Investigation [3] for the evaluation of dental restoration. These standard criteria should be utilised when the materials or the techniques used for restoration are to be investigated clinically. Restored material should be assessed whether it can be maintained or undergo refurbishment, repair or any replacement. One study has compared the FDI criteria and the traditional United States Public Health Service (USPHS) which is also called as Ryge criteria for the evaluation of restorations in deciduous teeth [4]. It was concluded that FDI was more sensitive for identifying difference in deciduous composite resin restorations [5].

In 2008 a tool called e-calib was introduced to facilitate both training and calibration of new FDI criteria. High quality photographs are required for this. This tool helps a practitioner to improvise their knowledge of assessing the restorations. A good quality restoration requires many clinical considerations. FDI criteria gives many strategies to identify the cause of failure [6,7]. Application of FDI criteria improves the standards of clinical practice and dental care [8-11]. FDI has included aesthetic, functional and biological criteria to assess restorations. The factors assessed include aspects like surface lustre, surface and marginal stain, assessment of anatomical form and colour match. All these are included in aesthetic criteria. Factors under functional criteria include restoration fracture, adaptation at the margins, contour. There is yet another important criteria which has to be assessed without bias, that is the biological criteria. Sensitivity, vitality and periodontal response should be evaluated for which the evaluator should be well informed and trained. Oral and general health should be given equal importance. In spite of measures taken to overcome non carious and carious lesions, recurrence is noted which needs to be assessed in the follow up. On evaluation each criteria is scored from clinically excellent to clinically poor, depending on which only observation or re-restoration is planned.

Scoring the Dental Restoration

The purpose of scoring is to evaluate the performance of the restoration. When the scoring indicates clinically unacceptable, the reason for failure will be recorded. Reasons of repair or replacement should be mentioned. This step helps to rule out subjective errors. Steps are taken to address issues like staining, gaps that can be sealed. This avoids the need for complete replacement of the restoration during review. The restorations are scored as relative failure or absolute failure depending on if it requires repair or replacement respectively. Though few restorations only require repair due to inaccessibility, it might require replacement. Once the 3 criterias are evaluated the final rating is calculated. Score of 4 and 5 are considered failure however the restoration may or may not require replacement. With this basis the aim of this study was to evaluate the knowledge on clinical criteria for evaluation of dental restorations among dentists.

MATERIALS AND METHODS

A questionnaire based cross-sectional study was conducted. Questionnaire comprising of 10 closed-ended

questions was prepared. The questionnaire was analyzed for clarity, comprehension of questions, bias and choices provided was validated by experts in the specialty. The questionnaire (Table 1) focused on the awareness of criteria for assessment of restoration, mode of assessment, attitude towards practicing the same. To describe the data, descriptive statistics percentage analysis was used.

Table 1: Questionnaire

Age:
Sex:
Speciality:
Years of experience:
1.Are you aware of clinical criteria for dental restorations
a) Yes b) No
2. Among the following which clinical criteria have you read
a) FDI Clinical criteria
b) Ryge criteria
c) none of the above
3. Do we need strict/universally accepted clinical criteria for evaluation of dental restorations.
a) Yes b) No
If yes why?
a)Easy communication
b)Standardisation
c)Easy follow up
d)Treatment plan
4. Have you undergone training for evaluation of dental restoration
a) yes
b) no
5.Clinical evaluation of restored material should be done
a) on the day of restoration
b) after one week
c) after 6,12 and 18 months
6. Assessment of the restoration is done through
a) black and white photographs
b)Colour photographs
c)Radiographs
7. The clinical assessment influence the treatment plan

a)strongly agree
b)Agree
c) disagree
d) strongly disagree
8. Is it possible to train the undergraduate students to assess restoration based on the FDI criteria.
a) yes
b) no
9.Are you practising FDI criteria If yes, reasons for practising the FDI criteria.
a) reliable
b) quality
c) easy
d) increase restoration longevity
e)treatment plan
f) faster than other criteria
10. Are you practising FDI criteria If no, reasons for not practicing the FDI criteria
a)Time consuming
b)patient cooperation
c)lack of knowledge and training
d)not interested

RESULTS

Total respondents n=100 completed the questionnaire. Among 100 dentists 53 are females and 47 are males. Minimum year of experience of dentists has been surveyed to be 1 year and maximum is 8 years.63% of the dentists have 3 years of experience.

All the participants were aware of the clinical criteria for assessment of dental restorations. 51% of respondents were aware of FDI criteria, 45% with Ryge and only 4% were well versed with both. 84% of participants favoured strict/universally accepted clinical criteria for evaluation. Among 100 dentists 58% were trained to assess the restoration. When asked about the time of assessment of restoration 20 % preferred assessment on the day of restoration, 39% preferred assessment after one week, and 41 % preferred assessment at 6,12 and 18 months. 45% of the dentists prefers assessment of restoration through direct vision, 35% through radiographs,25% through colour radiographs and 4% through black and white photographs. 86% of dentists reported that it is possible to train the undergraduate students to assess the restorations. 44% of respondents strongly agreed that clinical assessment influence the treatment plan, 42 % agreed, 9 % disagreed and 5% strongly disagreed the same. Among the dentists practising FDI criteria (33%), 40% of the dentists gave reliability as the reason for choosing to practice FDI criteria. The other reasons for choosing FDI criteria were quality (33%), treatment plan (11%), ease (7%), longevity (5%), faster (4%). Among the dentists not

practising FDI criteria(67%), 65% lack knowledge and training, 21% felt lack of patient cooperation, 11% felt it is time consuming, 3% were not interested.

DISCUSSION

Dental caries is known to increase the burden of oral health disease in developing countries [11]. The conservative approach of treating dental caries is through dental restorations. Many studies have demonstrated that major work of the dentist is re-restoration of previously restored teeth. The estimations of annual expenditure of replacement dentistry were 5000 million dollars in USA [12,13]. 600 million Euros in Netherland [14], 100 million Great Britain pounds in UK [15]. To avoid premature replacement of restoration, FDI clinical criteria and scoring system for the evaluation of both direct and indirect restoration have been introduced.

This study was done to evaluate the knowledge of dentists in assessing the dental restoration using clinical criteria. Knowledge of clinical criteria is important, which plays a role in treatment plan and in turn success of the procedure. 86% of participants were aware of FDI criteria for evaluating the restorations and 4% knew both Ryge and FDI criteria. We found that nearly half respondents were not trained for assessing the restorations. 84% respondents favoured criteria to be followed for evaluation of restoration which gives a positive scope for this system. Most of the dentists answered that restoration is assessed through direct vision which is true but even colour photographs can help in assessing which is seen in e-calib trainings but 36% and 4% population failed to give correct answer by choosing radiographs and black and white photographs which cannot currently help in assessment. We found that about 86% of participants strongly agree and agree that standard clinical criteria helps in treatment plan.

Literature search reveals increase in use if FDI criteria to assess restoration since it has adequate parameters which determines the longevity of the restoration. The most employed criteria was marginal adaptation and the least in the study was surface lustre [16]. Assessment and decision making has been simplified due to grouping of the criterias [17]. Deepak et al. have used the FDI criteria for assessment of proximal restorations [18]. However, for better assessment of proximal restorations, special instruments were designed by Loomans et al. at University of Technology at Delft, Nertherlands [19] and other instrument by investigators at University of Tokushima, Korea [20].

In spite of various advantages with FDI criteria, it remains as a hurdle to be practiced with ease. Some of the dentists feels it is time consuming or have limited knowledge. The FDI clinical criteria and scoring system is very efficient system for evaluation of direct and indirect restorations. FDI criteria has the advantage of flexibility to be structured according to the need of the clinical trial. By creating awareness, appropriate hands-on training and frequent positive reinforcement among the dentists, the practise of post-operative assessment of restorations at regular intervals can be achieved. This would pave a way to successful clinical practise and gain patient's trust in the long term.

CONCLUSION

Within the limitations of the study, it was concluded that all the dentists were aware of the clinical criteria for assessment of dental restorations. Almost half of the dentists were not trained to use the clinical criteria. The dentists practising the criteria identified reliability as the reason for practising. Lack of knowledge and training was the major reason among the dentists not practising.

Conflict of Interests: Nil

Source of funding: Nil

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