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Original Research

Comprehensive evaluation of dental practitioners understanding on interocclusal recording material and comparison between general dentist and Prosthodontist: An (questionnaire based) original research study

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***ABSTRACT*:**
Background and Aim: To achieve a successful prosthesis it is important to achieve harmony between the maxilla-mandibular relationship and anatomy of patient. Thus, it is essential to record this relationship with the least possible error to obtain a successful prosthesis. The aim of this study was to evaluate dental practitioner's understanding on interocclusal recording materials, its clinical presumptions and comparison between most widely used interocclusal record materials by general dentists and Prosthodontists. **Material Methods:** A Questionnaire of 14 questions was made and circulated among dental practitioners included prosthodontists, and the results were statistically analyzed. A total no. of 150 general dentists and prosthodontist (75each) participated in the study out of which 138 responded the questionnaires. All responses of questionnaires was reviewed and analyzed statistically. P value less than 0.05 was considered significant ($p< 0.05$). **Result:** The relative educational qualifications of the participants were BDS (46%), MDS (36%) & PG Student (18%) participated in the study. More than 78% of the participants agreed that they manipulate wax for interocclusal recording by hot water. More than half of the participants agreed that they usually do not use any recent interocclusal record material. Majority of the participants (84%) agreed that they trim the excess interocclusal material after it has set and before sending to laboratory. **Conclusion:** Within the limitations of the study authors have drawn very significant conclusions about interocclusal recording materials. Most of the participants were using interocclusal recording materials. Also, majority of the participants were using tray for manipulation of bite registration material. However, there was clear lack of usage of recent or advanced interocclusal recording materials. In general, the relative understanding of participants about clinical usage of interocclusal recording materials was fair.
Keywords: Questionnaire, Interocclusal Recording Materials, Bite Registration, Practitioners

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INTRODUCTION

Interocclusal recording materials are generally used in prosthetic dentistry to register jaw relationships for mounting dental casts on an articulator. If the inter-arch registration is inaccurate, the mounted casts will not show the patient's existing maxilla-mandibular relationship, and errors in diagnosis and treatment will result.[1,2] The interocclusal record by various materials and methods will play a positive role in securing the desired occlusion in the fabrication of prosthesis. An accurate interocclusal record is essential for the successful delivery of fixed prosthodontic restorations.[3,4] There are various materials and techniques used to obtain an interocclusal record in order to facilitate mounting of the dental casts on an articulator.[5,6] Various impression materials used to record maxilla-mandibular relation are plaster, waxes, zinc oxide eugenol, acrylic resin, hydrocolloid and newer one include polyether polyvinylsiloxane both waxes and zinc oxide eugenol are most commonly used interocclusal record materials because of their ease of manipulation, economical & less skill

dependent.[7,8] The accuracy of an interocclusal record material however is influenced not only by the material properties but also by the recording technique as well as the reliability of the mandibular position influenced by the occlusal contacts, muscular action or tissue changes within joints.[9,10] Dimensionally accurate interocclusal record material is imperative for a successful transfer of the maxilla-mandibular relationship with a plethora of material available confusing prevails in the mind of clinician as to which is the better option. Lot of parameters are there to determine the materials properties like dimensional stability, dimensional accuracy, ease of manipulation and shelf life.[11,12] The main purpose of this article was to evaluate the dental practitioners understanding on interocclusal recording material and comparison between general dentist and prosthodontist.

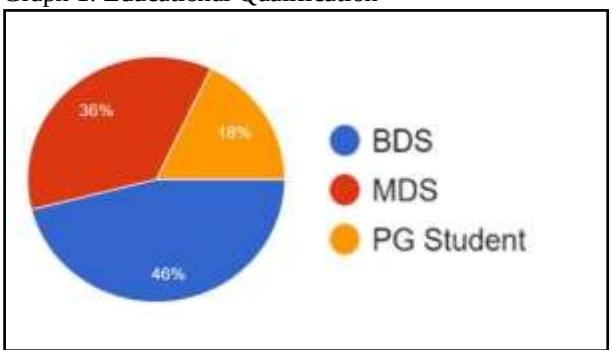
MATERIALS AND METHOD

The present study was conducted to appraise the materials and understanding of general practitioners and prosthodontists on various bite registration techniques and materials, their manipulation and storage used in different dental procedures. A total no. of 150 general dentists and prosthodontist (75each) participated in the study out of which 138 responded the questionnaires. This study was outlined, planned and executed on questionnaire ideology. The questionnaire was self prepared, close ended questionnaire and comprised of 14 questions. Main aim of the questionnaire was to collect the general details of the dentist, understanding and choice of material for interocclusal record, techniques, manipulation, storage of material and technicians asserts for usage of interocclusal records. The revert questionnaires was reviewed and analyzed statistically. Authors have decided to perform this study on questionnaire model as such types of studies are very imperative. Questionnaire based studies provides significant information about individual and group level attitude. They also provide a broader range of data with enhanced explanation and perception. The relative significance of this study was also clarified to all participating practitioners. The privacy and other rights of respondents were kept completely reserved. Results thus obtained was tabulated and subjected to basic statistical analysis. P value less than 0.05 was considered significant ($p< 0.05$).

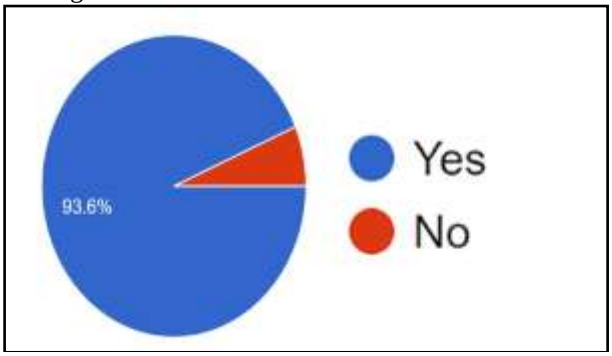
STATISTICAL ANALYSIS AND RESULTS

All the studied factors and data were assembled and sent for statistical analysis using statistical software Statistical Package for the Social Sciences version 21 (IBM Inc., Armonk, New York, USA). The resultant data was subjected to appropriate statistical tests. A clinical trial of various interocclusal record materials is carried out in which a total no. of 150 general dentists and prosthodontist (75each) participated in the study out of which 138 responds the questionnaires. Main aim of this clinical trial to appraise the materials and understanding of general practitioners and prosthodontists on various bite registration techniques and materials they prefer, their manipulation, and storage used in different dental procedures. Question no 1 was about patients demographic details. In this clinical trial educational qualifications of the participants were BDS (46%), MDS (36%) & PG Student (18%) participated in the study (Question no 2, Graph 1). In this cross sectional study roughly 93% of the dental Practitioners and Prosthodontists use interocclusal recording material whereas 6.4% of the responds no to the interocclusal recording material for bite registration (Graph 2). All participants did not utilize similar material however maximum (33.8%) agreed that they use modelling wax for bite registration (Graph 3). More than half of the participants agreed that they manipulate zinc oxide eugenol bite registration material by metal foil (Graph 4). More than 78% of the participants agreed that they manipulate wax for interocclusal recording by hot water (Graph 5). More than half of the participants agreed that they usually do not use any recent interocclusal record material (Graph 6). More than 76% of the participants agreed that they usually perform direct syringing on occlusal surface using mixing dispenser (Graph 7). Roughly 60% of participants stated that they place it over the prepared teeth and quadrant which is having missing teeth (Graph 8). Majority of the participants agreed that they use tray for manipulation of bite registration material (graph 9). Majority of the participants (84%) agreed that they trim the excess interocclusal material after it has set and before sending to laboratory (graph 10).

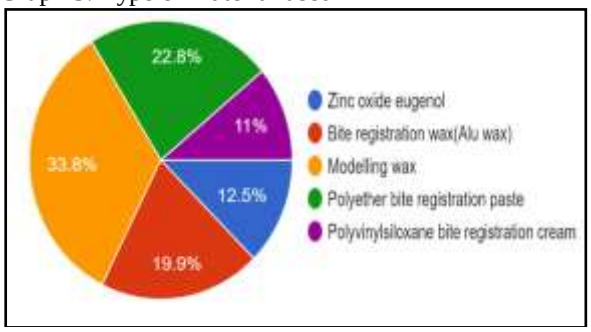
Graph 1: Educational Qualification



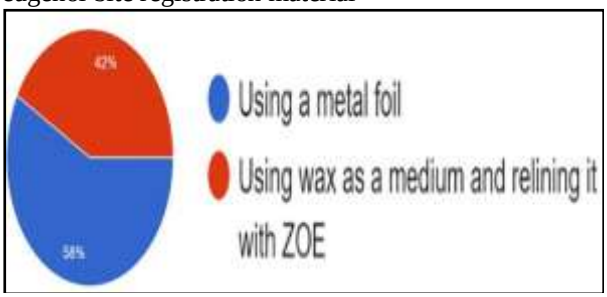
Graph 2: Use of interocclusal recording material for bite registration



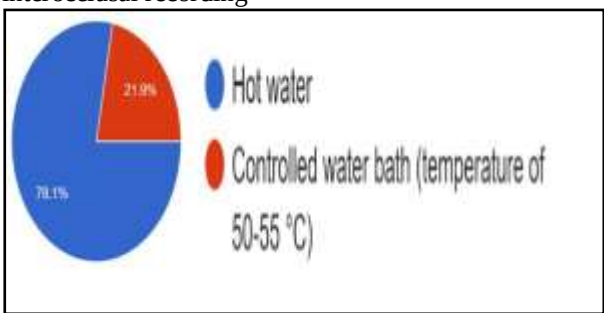
Graph 3: Type of material used



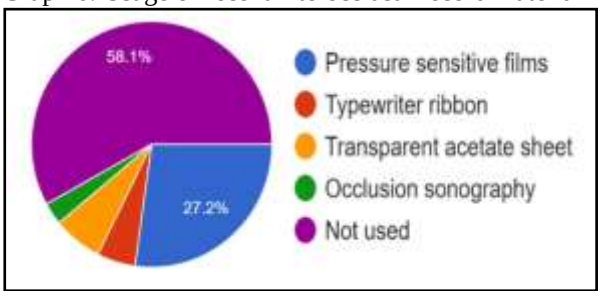
Graph 4: Method of manipulation of zinc oxide eugenol bite registration material



Graph 5: Method of manipulation of wax for interocclusal recording

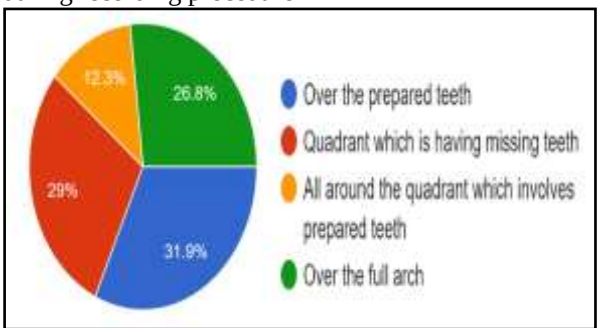


Graph 6: Usage of recent interocclusal record material

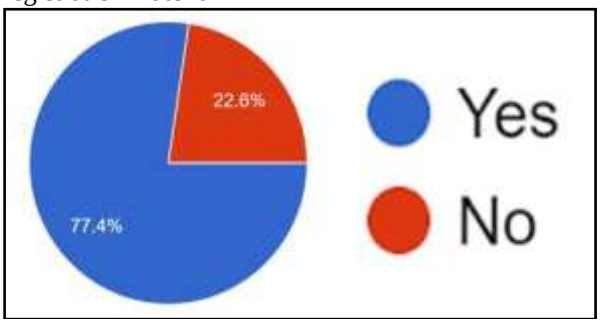


Graph 7: Preferred method of manipulation for polyether/polyvinylsiloxane

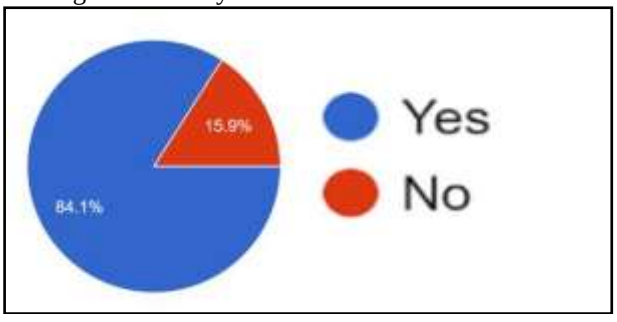
Graph 8: Preferred place for interocclusal record during recording procedure



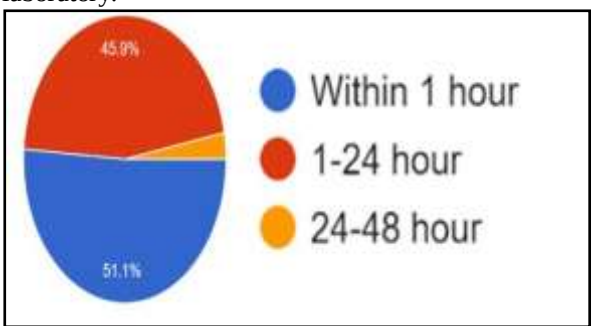
Graph 9: Usage of tray for manipulation of bite registration material



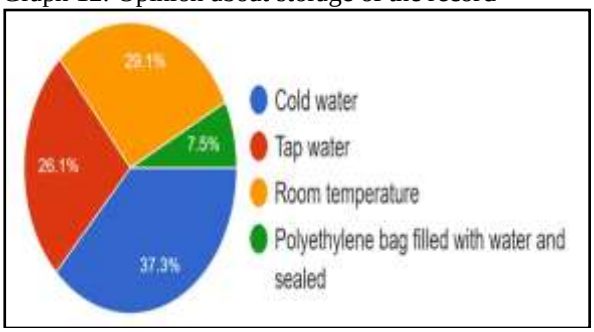
Graph 10: Opinion about trimming of the excess interocclusal material after it has set and before sending to laboratory



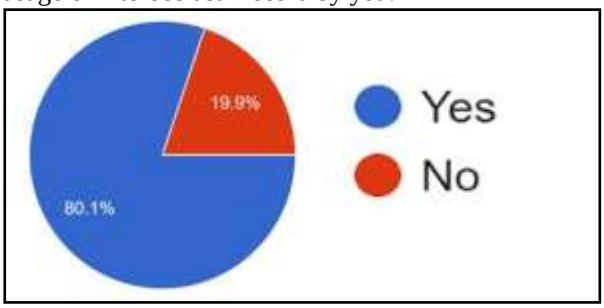
Graph 11: Timing of transferring the interocclusal record material after it has set and before sending to laboratory.



Graph 12: Opinion about storage of the record



Graph 13: Outlook of your laboratory technician about usage of interocclusal record by you.



Opinion responses were obtained about timing of transferring the interocclusal record material after it has set and before sending to laboratory. It varied from within one hour to 1-24 hour (Graph 11). Attitude responses were obtained about storage of the record (Graph 12). Roughly 80% of laboratory technician insist their clinician for usage of interocclusal record (Question no 14, Graph 13).

DISCUSSION

The introduction of different interocclusal recording materials has put clinician in dilemma that which material should be used in clinical practice for accurate recording and transferring of accurate occlusal records for articulation of patient's working cast in fabrication of good satisfactory prosthesis.[13-16] An ideal occlusal registration material should provide dimensional stability, resistance to compression force after setting, accurate recording, ease of handling, biocompatibility with the tissues involved in the procedure and ease of verification. The accuracy of an interocclusal record is influenced not only by the material properties, but also by the recording technique, as well as the reliability of the mandibular position influenced by the occlusal contacts, muscular action, or tissue changes within the joints. However, apart from the operator's clinical ability and the technique followed, the chosen material can critically affect the accuracy of the interocclusal registration.[17-22] Hence the present clinical trial compare the various interocclusal record material used by general practitioners and prosthodontists. This cross sectional survey was undertaken to assess the general practitioners understanding on choosing bite registration techniques and material for recording. According to the questionnaire result it was found that majority of general practitioners used modelling wax as an interocclusal recording material whereas recent interocclusal recording material were not gained repute in general practise.[23-27] Waxes are most commonly used bite registration material because it is cost effective and manipulated easily. Enormously controversy exists regarding the accuracy, usefulness and manipulative skills required in obtaining accurate interocclusal records. Waxes were found to be dimensionally unstable; this is because of their greater coefficient of thermal expansion. Also, they show distortion while removal from mouth and considerable contraction on cooling.[28] An ideal occlusal registration material should provide dimensional stability, resistance to compression force after setting, accurate recording, ease of handling, biocompatibility with the tissues involved in the procedure and ease of verification. The accuracy of an interocclusal record is influenced not only by the material properties, but also by the recording technique, as well as the reliability of the mandibular position influenced by the occlusal contacts, muscular action, or tissue changes within the joints. However, apart from the operator's clinical ability and the technique followed, the chosen material can critically affect the accuracy of the interocclusal registration.[29-31]

CONCLUSION

Our study results undoubtedly showed the current scenario of clinician's perception about clinical usage of interocclusal recording materials. Within the limitations of the study authors have drawn very significant conclusions about interocclusal recording materials. Most of the participants were using interocclusal recording materials. Also, majority of the participants were using tray for manipulation of bite registration material. However, there was clear lack of usage of recent or advanced interocclusal recording materials. In general, the relative understanding of participants about clinical usage of interocclusal recording materials was fair. Nevertheless, we anticipate some other large scale studies to be

conducted that could further establish certain standard guidelines in these perspectives.

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