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Original Research

Knowledge regarding provisional restoration in fixed prosthodontics- A survey among dental practitioners in Bhopal city, Madhya Pradesh.

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ABSTRACT

Aim: To access the knowledge regarding provisional restoration among dental practitioner in Bhopal city, Madhya Pradesh.

Method: This study was conducted among 200 dental practitioners, 60% were MDS and 40% were BDS, out of which 58% practitioner were having working experience of 0-5 years, 28% were having 6-10 years of experience and 14% were having experience of more than 10 years. statistical analyses were undertaken to present an overview of the findings from this sample.

Result: The knowledge and practice of provisional restoration in fixed prosthodontics among BDS and MDS participants and clinicians having working experience of many years have few opinions in common like performing diagnostic wax-up, using self -cure material for fabrication, using zing oxide eugenol as provisional cement and checking for occlusion. With advancement, Addition silicone is the material of choice for experienced clinician with informing their patients about the limitation of provisional restoration was must.

Conclusion: this study concluded that to make our practitioner more accomplished and enhancing their proficiency, efforts should be made regularly by continuing dental education programs and awareness towards the recent advancement of materials.

Introduction

According to the Glossary of Prosthodontic Terms **"**Provisional Restoration is a fixed or removable dental prosthesis, or maxillofacial prosthesis designed to enhance esthetics, stabilization, and/or function for a limited period of time, after which it is to be replaced by a definitive prosthesis [1]. Provisional restorations have limited lifespan in fixed prosthodontic treatments. They are also referred to as "interim" or "transitional" restorations. This treatment aims on protecting pulpal and periodontal health, to evaluate intermaxillary relationship, promoting guided tissue healing, preventing relocation of the abutments, and providing adequate occlusal scheme [2] [3]. Provisional restorations are important when they have to anticipate to function for outstretch duration like in case of full mouth rehabilitation, which is necessary to assess patient's necessary adjustment for the treatment [4] [5]. They are used as diagnostic aids when altering the vertical dimension of occlusion and colour of definitive restoration [6]. It is a helpful principle that all the procedures have in common the development of a mold cavity into which a plastic material is packed [7]. Provisional treatment also provides psychological management of patients, whereas a mutual understanding of treatment outcome and limitations can be identified. It

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is a crucial step attaining consistently predictable success in the functional and aesthetic outcomes in fixed prosthodontics [8]. This survey was conducted to evaluate the knowledge and attitude among dental practitioners regarding provisional restorations after tooth preparation in Bhopal city, Madhya Pradesh.

MATERIALS AND METHODS

Study design: This cross-sectional survey was conducted among dental specialist, dental general practitioner and post graduates and interns with part time working experience in Bhopal city, Madhya Pradesh.

Ethical approval: Ethical approval of this study was obtained from the research ethics committee of Peoples University, Bhopal, Madhya Pradesh.

Study population: This survey consists of 10 open multiple-choice questions which were distributed to 200 participants. The Questionnaire was prepared in English language. Both online and offline mode were chosen for the distribution of questionnaire. The set of questions consisted of two parts. The first part measured the level of education and the years of practicing experience whereas, the second part evaluated the knowledge of routine practice of provisional restoration.

Informed consent: was obtained from the prosthodontists and they were assured that the information would be confidential.

Survey instruments: A structured questionnaire was used with some items amended to apply to the prosthodontics practitioner (TABLE 1). Evaluating on two aspects, firstly, among BDS and MDS practitioner and secondly, with increasing working experience of 0-5, 6-10 and more than 10 years was done. The set of questions consisted of two parts. The first part measured the level of education and the years of practicing experience whereas, the second part evaluated the knowledge of routine practice with provisional restorations, its duration, functions, the material used, luting cements and the limitation of provisional restorations.

The questionnaire was semi-structured and pre-tested to check the validity and reliability by running a pilot test. The respondents were informed about the aim and objectives of the study. After eliciting their consent in participation, the questionnaire was distributed. Adequate time was provided to fill the set of questions. The response of the practitioners was recorded, analysed for flaws, checked for completeness and were taken up for assessment.

Statistical analysis

After data was collected and coded, the statistical analysis was done using SPSS statistical software package (Version 25). All statistical analyses were carried out at a significance level of $P < 0.05$. Results were analysed and compared using Chi-square test and frequency test.

RESULTS

When participants were assessed on their preference of giving temporary crown after tooth preparation 8.0% (N=16) BDS and 20.5% (n=41) MDS routinely follow (TABLE 2). Accounting for knowledge and attitude practitioner with the working experience of 0-5 years, 6-10 and more than 10 years with 40.5% (n=81), 20.0% (n=40) and 8.0% (n=16) agrees only if patient is ready to afford. (TABLE 3). The prime function of provisional restoration for BDS with 28.5% (n=57) and 49.5% (n=99) MDS is to give strength to the teeth as well as restore the masticatory function (TABLE 2). working experience of 0-5, 6-10 and above 10 years were 41.5% (n=83), 26.5% (n=53) and 10.0% (n=20) respectively,

preferred the same. (TABLE 3). Majority 31% BDS and 44% MDS respondents agree that provisional restoration should be given until permanent crown is. (TABLE2). Experience between 0-5, 6-10 and more than 10 years of working experience 45.5% (n=91), 21.5% (n=43) and 8.0% (n=16) respectively agrees to the same. (TABLE 3). Majority N=60 BDS and N=84 MDS respondents diagnostic wax up. (TABLE 2). Respondents with working experience 0-5years 45.0%, 6-10 years 17.0% and more than 10 years 10.0% agrees for the same. (TABLE 3). Polymethylmethacrylate is used for fabrication of temporary crowns, by 27.0% BDS and 42.5% MDS (TABLE 2). Practitioner experience for 0-5 years with 42.0% (N=84), 6-10 years with 19.5% (N=39) and more than 10 years 8.0% (N=16) (TABLE 3). Irreversible hydrocolloid is the final impression material for 24% BDS and 29.0%MDS (TABLE 2) respondents experience, 0-5years is 30.0% and 6-10 years is 16.0%, but practitioner with experience above 10 years 7.0% use addition silicone. (TABLE 3). Majority BDS respondents 18.0% (N=36) use preformed custom crowns shells, while 35.5% (N=71) MDS uses customised resin. (TABLE 2). On the basis of experience, respondents with 0-5 years with 29.0% (N=58), 6-10 with 13.5% (N=27) and more than 10 years uses customized resin in greater percentage of 7.0% (N=14). (TABLE 3). Zinc oxide eugenol is the provisional cement use by 20.5% BDS and 38.5% (N=77) MDS (TABLE 2). Working experience of 0-5 years, 6-10 years and more than 10 years with 34.5% (N=69), 13.5% (N=27) and 11.0% (N=22) respectively also use the same. (TABLE 3). 38.5% (N=77) BDS and MDS respondents 57.0% (N=114) inform patients about limitation of provisional restoration before starting the procedure. (TABLE 2). Working experience 0-5 years, 6-10 years and more than 10 years with 54.5% (N=109), 28.0% (N=56) and 13.0% (N=26) respectively does the same. (TABLE 3). Lastly, in terms of checking occlusion after giving provisional restoration, majority BDS 39.0% (N=78) and MDS 57.0% (N=114) (TABLE 2) and working experience of 0-5 years, 6-10 years and more than 10 years with 58.0% (N=116), 25.0% (N=50) and 13.05% (N=26) respectively do the same. (TABLE 3)

DISCUSSION

In this cross-sectional study, majority BDS, MDS and respondent with greater working experience prefer giving provisional restoration after tooth preparation only if patient is ready to afford. The similar response was given by Brennan *et al* [9] and Aryaf Alhoumaidan *et al.* (2019) [10] in their study concluding the choice for the dental treatment gets influenced by the cost. The prime function of temporary restoration according to 28.5% BDS, 49.5% MDS and 78% of experienced clinicians is to give strength to the prepared teeth and restore masticatory function, similar results were presented by Shetty K *et al* in their study in which 30% BDS and 42% MDS and 72% of experienced clinicians often perform diagnostic wax up[11]. Similar study conducted by D Saee Deshmukh *et al.* (2020) Out of 79% of total respondents 23% felt the need to perform diagnostic wax up [12]. As they enhance the predictability of treatment by modeling the desired result in wax prior to treatment. In the present study, 31% BDS and 44% MDS prefer to give temporary crowns until permanent crown is ready. similar results were found in the study done by Mohamed et al. (2010) [13] and D Saee Deshmukh *et al.* (2020) were 54% of the dentists preferred to give provisional restoration for a period of 7-15 days [12]. The use of provisional restorations relies on a reasonable turnaround time from tooth preparation to completion of definitive treatment but longer time period of use can promote tooth

TABLE 1- QUESTIONNAIRE

1. Do you prefer giving provisional crowns after tooth preparation?
    a. Yes, I routinely follow.
    b. No, it's time consuming.
    c. Only if patient is ready to afford.
    d. There is no need of it.
2. The prime function of provisional crown according to you?
    a. To give strength to the prepared tooth.
    b. To restore masticatory function.
    c. Both a and b.
3. For how long provisional crowns can be given?
    a. Two days only.
    b. Two weeks only.
    c. Until permanent crown is ready.
    d. One month or more.
4. Do you perform diagnostic wax-up before giving provisional restorations?
    a. Yes.
    b. No.
    c. Often.
5. What material you use for fabrication of provisional crowns?
    a. Polymethylmethacrylate
    b. Polyethylmethacrylate
    c. Light polymerized UDMA
    d. Bis GMA
6. What impression material is routinely used to make final impression?
    a. Addition silicone.
    b. Irreversible hydrocolloid.
    c. Polysulfide.
7. What type of provisional restoration you give?
    a. Preformed custom crown shells.
    b. Customized resin restoration.
    c. Protemp.
8. What material you use for placement of temporary crowns?
    a. Glass ionomer cement.
    b. Zinc oxide eugenol.

c. Composite.

9. Do you inform your patients on limitation regarding provisional coverage?
   a. Yes, always.
   b. No, there is no need of it.
   c. There is no limitation as such.
10. Do you check occlusion after giving provisional restoration?
   a. Yes.
   b. No.
   c. Occasionally.
   d. No need of it.

TABLE 2: KNOWLEDGE ATTITUDE AND PRACTICE ACCORDING TO BDS/MDS

QUESTIONS		BDS N (%)	MDS N (%)	TOTAL N (%)	Chi Square Value	Significance 'p' Value
Q1		16(8.0%)	41(20.5%)	57(28.5%)	**11.536**	**0.009(S)**
		0(0.0%)	2(1.0%)	2(1.0%)		
		60(30.0%)	77(38.5%)	137(68.5%)		
		4(2.0%)	00.0%)	4(2.0%)		
Q2		4(2.0%)	4(2.0%)	8(4.0%)	**3.561**	**0.169(S)**
		19(9.5%)	17(8.5%)	36(18.0%)		
		57(28.5%)	99(49.5%)	156(78.0%)		
Q3		0(0.0%)	2(1.0%)	2(1.0%)	**9.687**	**0.021(**
		7(3.5%)	24(12.0%)	31(15.5%)		

		• 62(31.0%)	• 88(44.0%)	• 150()75.0%		**S)**
		• 11(5.5%)	• 6(3.0%)	• 17(8.5%)		
• Q4		• 16(8.0%)	• 28(14.0%)	• 44(22.0%)	• • **0.631**	• • **0.729(S)**
		• 4(2.0%)	• 8(4.0%)	• 12(6.0%)		
		• 60(30.0%)	• 84(42.0%)	• 144(72.0%)		
• Q5		• 54(27.0%)	• 85(42.5%)	• 139(69.5%)	• • **7.549**	• • **0.056 (S)**
		• 8(4.0%)	• 8(4.0%)	• 16(8.0%)		
		• 15(7.5%)	• 12(6.0%)	• 27(13.5%)		
		• 3(1.5%)	• 15(7.5%)	• 18(9.0%)		
• Q6		• 29(14.5%)	• 58(29.0%)	• 87(43.5%)	• **3.419**	• **O.181(S)**
		• 48(24.0%)	• 56(28.0%)	• 104(52.0%)		
		• 3(1.5%)	• 6(3.0%)	• 9(4.5%)		
• Q7		• 36(18.0%)	• 25(12.5%)	• 61(30.5%)	• **14.855**	• **0.001 (S)**
		• 28(14.0%)	• 71(35.5%)	• 99(49.5%)		
		• 16(8.0%)	• 24(12.0%)	• 40(20.0%)		
• Q8		• 33(16.5)	• 36(18.0%)	• 69(34.5%)	• **3.323**	• **0.190 (S)**
		• 41(20.5%)	• 77(38.5%)	• 118(59.0%)		

		• 6(3.0%)	• 7(3.5%)	• 13(6.5%)		
• Q9		• 77(38.5%)	• 114(57.0%)	• 191(95.5%)	• **0.175**	• **0.676(S)**
		• 0	• 0	• 0		
		• 3(1.5%)	• 6(3.0%)	• 9(4.5%)		
• Q10		• 78(39.0%)	• 114(57.0%)	• 192(96.0%)	• **0.781**	• **0.377(S)**
		• 0	• 0	• 0		
		• 2(1.0%)	• 6(3.0%)	• 8(4.0%)		
		• 0	• 0	• 0		

TABLE 3: KAP ACCORDING TO YEAR OF EXPERIENCE

• QUESTIONS		• 0-5 YR	• 6-10 YR	• >10 YR	• TOTAL	• Chi Square Value	• Significance 'p' Value
		• N (%)	• N (%)	• N (%)	• N (%)		
• Q1		• 33(16.5%)	• 14(7.0%)	• 10(5.0%)	• 57(28.5%)		
		• 2(1.0%)	• 0(0.0%)	• 0(0.0%)	• 2(1.0%)	• **4.068**	• **0.667(NS)**
		• 81(40.5%)	• 40(20.0%)	• 16(8.0%)	• 137(68.5%)		
		• 2(1.0%)	• 2(1.0%)	• 0(0.0%)	• 4(2.0%)		
• Q2		• 8(4.0%)	• 0(0.0%)	• 0(0.0%)	• 8(4.0%)	•	•
		• 27(13.5%)	• 3(1.5%)	• 6(3.0%)	• 36(18.0%)	• **15.347**	• **.004(NS)**
		• 83(41.5	• 53(26	• 20(10	• 156(78.		

		%)	.5%)	.0%)	0%)		
• Q3		• 2(1.0%)	• 0(0.0%)	• 0(0.0%)	• 2(1.0%)	•	•
		• 15(7.5%)	• 8(4.0%)	• 8(4.0%)	• 31(15.5%)	• **6.701**	• **0.349(NS)**
		• 91(45.5%)	• 43(21.5%)	• 16(8.0%)	• 150(75.0%)		
		• 10(5.0%)	• 5(2.5%)	• 2(1.0%)	• 17(8.5%)		
• Q4 • •		• 19(9.5%)	• 19(9.5%)	• 6(3.0%)	• 44(22.0%)	• **8.998**	• **0.061(NS)**
		• 9(4.5%)	• 3(1.5%)	• 0(0.0%)	• 12(6.0%)		
		• 90(45.0%)	• 34(17.0%)	• 20(10.0%)	• 144(72.0%)		
• Q5		• 84(42.0%)	• 39(19.5%)	• 16(8.0%)	• 139(69.5%)	• **8.181**	• **0.225(NS)**
		• 7(3.5%)	• 7(3.5%)	• 2(1.0%)	• 16(8.0%)		
		• 18(9.0%)	• 3(1.5%)	• 6(3.0%)	• 27(13.5%)		
		• 9(4.5%)	• 7(3.5%)	• 2(1.0%)	• 18(9.0%)		
• Q6		• 52(26.0%)	• 21(10.5%)	• 14(7.0%)	• 87(43.5%)	• **2.949**	• **0.566 (NS)**
		• 60(30.0%)	• 32(16.0%)	• 12(6.0%)	• 104(52.0%)		
		• 6(3.0%)	• 3(1.5%)	• 0(0.0%)	• 9(4.5%)		
• Q7		• 35(17.5%)	• 20(10.0%)	• 6(3.0%)	• 61(30.5%)	• **1.755**	• **0.781 (NS)**
		• 58(29.0%)	• 27(13.5%)	• 14(7.0%)	• 99(49.5%)		
		• 25(12.5%)	• 9(4.5%)	• 6(3.0%)	• 40(20.0%)		

• Q8		• 45(22.5%)	• 20(10.0%)	• 4(2.0%)	• 69(34.5%)	• **18.570**	• **0.001 (NS)**
		• 69(34.5%)	• 27(13.5%)	• 22(11.0%)	• 118(59.0%)		
		• 4(2.0%)	• 9(4.5%)	• 0(0.0%)	• 13(6.5%)		
• Q9		• 109(54.5%)	• 56(28.0%)	• 26(13.0%)	• 191(95.5%)	• **6.549**	• **0.038 (NS)**
		• 0	• 0	• 0	• 0		
		• 9(4.5%)	• 0(0.0%)	• 0(0.0%)	• 9(4.5%)		
• Q10 • •		• 116(58.0%)	• 50(25.0%)	• 26(13.05)	• 192(96.0%)	• **9.291**	• **0.010(NS)**
		• 0	• 0	• 0	• 0		
		• 2(1.0%)	• 6(3.0%)	• 0(0.0%)	• 8(4.0%)		
		• 0	• 0	• 0	• 0		

sensitivity and potential pulp damage [13].,In the current study majority 27% BDS and 42.5% MDS and 69% clinician with working experience of more than 10 years prefer using polymethylmethacrylate, that may be because this is a popular biomaterial with easy manipulation, tolerable physical and mechanical properties and cost effective [14]. For type of provisional restoration clinicians prefer to give customized resin restoration. This might be because of the immediate placement of temporary crowns with more accurate marginal fit after tooth preparation. In the similar study conducted by D Saee Deshmukh *et al.* (2020), 34% use bis-acryl composite resin (Protemp IV,3M) [12]. Most of the respondents, 24% BDS use irreversible hydrocolloid for making final impression, might be because of their ease in using and low-cost factor [5] whereas, 29% of MDS and clinicians with working experience of greater years prefer using addition silicone. more. In the study conducted by Abdul S. Ansari *et al.* (2021) in Riyadh city, Saudi Arabia concluded that most of the study participants (57–68%) used addition silicon as the material of choice, may be because this material has superior accuracy than other materials as well as compensates for dimensional changes on setting [15] [16]. However, a study conducted in Pakistan by Hanif A et al. (2014) reported that more than 90% of their participants used alginate as a material of choice for final impression [17]. In the current study, zinc oxide eugenol is use for placement of provisional restoration by 38.5% MDS and 20.5% BDS and clinicians with greater working experience. As they provide excellent sedative effect on sensitive tooth as well as offers easy removal at will [18]. But recent studies have shown this cement to reduce the

efficacy of a bonding system [18] [19]. Similar results were found in the studyby Yalavarthi S et al (2019)[20]. On informing the limitation regarding provisional restoration 38.5% BDS and 57% MDS always inform their patients and in terms of working experience, clinician with major count in total of 95.5% positively inform their patients about the limitation of provisional restoration. Patients should always be informed that provisional will not be as durable, well-fitting or esthetic as permanent restoration will be.

CONCLUSION

The knowledge and practice of provisional restoration in fixed prosthodontics among BDS and MDS participants and clinicians having working experience of many years have few opinions in common like performing diagnostic wax-up, using self -cure material for fabrication, using zing oxide eugenol as provisional cement and checking for occlusion. With advancement, Addition silicone is the material of choice for experienced clinician with informing their patients about the limitation of provisional restoration was must. However, to make our practitioner more accomplished and enhancing their proficiency, efforts should be made regularly by continuing dental education programs and awareness towards the recent advancement of materials.

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