Impression materials and techniques used in fixed prosthodontics: A questionnaire-based survey to evaluate the knowledge and practice of dental students in Riyadh city

Abdul S. Ansari¹, Musab A. Alsaidan², Saleh K. AlGadhi², Mishary A. Alrasheed², Ibrahim G. Al Talib², Abdullah K. Alsaaid², Shahzehb H. Ansari³

¹Assistant Consultant in Prosthodontics, Dental University Hospital, King Saud University, ²BDS, College of Dentistry, King Saud University, ³Faculty, Department of Preventive Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia

Abstract

Introduction: Among the several materials and techniques being used in fixed prosthodontics, impression materials and techniques were the major focus of this study. These materials are available in the market to be used by dental practitioners. However, their choice depends on certain factors, which include their properties, advantages, disadvantages, and cost.

Materials and Methods: A questionnaire-based cross-sectional study was conducted among dental students using online survey.

Results: Six hundred and sixteen out of 800 dental students from Riyadh city took part in this study. It was noted from the findings that 88% male students used alginate for diagnostic impressions, which was statistically significant and lower than females (94%). Ninety-one percent of the interns reported that they used retraction cord for gingival retraction as compared to 81% fourth-year students, with the difference being statistically significant (Pvalue: 0.016).

Conclusion: Dental students in Riyadh city have a strong inclination toward a particular material, either for primary or secondary impressions or gingival retraction options.

Keywords: Dental students, fixed prosthodontics, impression materials

Introduction

One of the important objectives of dentistry is the restoration and replacement of damaged or missing teeth. This can be achieved by placing fixed prosthesis in order to regain the function and aesthetics. Crowns, fixed partial denture, and veneers are important options for replacing a damaged or missing tooth. Fixed prosthodontics treatment provides an exceptional satisfaction for both patients and dental practitioners at primary care level. It transforms an unhealthy, unattractive dentition with poor function into a comfortable, healthy occlusion while enhancing aesthetics and function. The quality of fixed prostheses directly affects its long-term survival. Therefore, it is essential that dental practitioners follow all the fundamental clinical guidelines for success, predictability, and longevity of the treatment provided. Several materials and techniques are involved in the successful implementation of these procedures. Therefore, knowledge of dental professionals regarding materials and techniques used is important for successful outcome.¹²

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Accepted: 24-12-2020
Published: 19-01-2021

Access this article online

Quick Response Code:
Website: www.jfmpc.com
DOI: 10.4103/jfmpc.jfmpc_2094_20

How to cite this article: Ansari AS, Alsaidan MA, AlGadhi SK, Alrasheed MA, Al Talib IG, Alsaaid AK, et al. Impression materials and techniques used in fixed prosthodontics: A questionnaire-based survey to evaluate the knowledge and practice of dental students in Riyadh city. J Family Med Prim Care 2021;10:514-20.

© 2021 Journal of Family Medicine and Primary Care | Published by Wolters Kluwer - Medknow
There are numerous techniques described for making fixed partial denture impressions, including single copper band technique, mono-phase technique, single-step technique, or the double-step technique. Among the several materials being used in fixed prosthodontics, impression materials and techniques were mainly focused in this study. These materials are available in the market to be used by dental practitioners. However, their choice depends on certain factors, which include their properties, advantages, disadvantages, and cost. There are several types of impression materials that can be used in fabricating fixed dental prostheses, which include Alginate, condensation silicon, polysulfides, polyethers, and polyvinyl siloxane.

Few previous studies have reported the level of knowledge among dental practitioners regarding impression materials and techniques. A survey among Indian dentists revealed that majority of the dentists use irreversible hydrocolloid material for diagnostic impressions. As far as the use of gingival retraction cord was concerned, most of dentists used it as compared to electrosurgery and lasers and when performing final impression, majority of the dental professionals chose addition silicone as the first choice.

Another study conducted in Pakistan showed that majority of dentists used hydrocolloid materials for diagnostic impression. When compared between general practitioners and specialists, it was noted that gingival retraction cord was used commonly by the specialists than general practitioners. Similar findings were observed when inquired about articulation of casts before sending to the laboratory.

Very few studies reported about impression materials and impression techniques used by the dental students. Therefore, the aim of this study was to evaluate the overall knowledge of dental students regarding the use of impression materials and techniques in fixed prosthodontics and to compare the findings on the basis of educational level and years of experience.

**Materials and Methods**

A cross-sectional study was conducted among dental students from Riyadh, Saudi Arabia, through online questionnaire-based survey method regardless of their year of study and experience. This study was conducted from April, 2020 to August, 2020. Dental students from Riyadh city willing to take part in this study were requested to fill up and submit the questionnaire form. Ethical approval for this study was obtained from the Institutional Review Board of Riyadh Elm University, Riyadh, [IRB approval number “FRP/2020/282/298/291, Dated 12 Oct. 2020.”] A confidential questionnaire survey was designed to suit the local context to evaluate the details of the impression materials and techniques used in fixed prosthodontics. Initially, a pilot study was done to check the validity and reliability by sending the questionnaire to 20 participants. The obtained data were inserted in SPSS software (version 22) to determine the reliability using Chronbach's coefficient alpha (α = 0.788). Validity of the questionnaire was tested by experienced researchers from Riyadh Elm University and changes were made according to their feedback and comments.

Then, the survey questionnaire was sent to 800 dental students across Riyadh city through e-mails in the Google forms with accompanying letter describing the aims and objectives of the study and how the data will be used. All the participants were reminded 1 week after the initial e-mails. Personal identification of individual participants was not asked to maintain confidentiality. A questionnaire was designed with questions pertaining to personal and demographic information of the participants followed by knowledge and practice of using different impression materials and techniques.

Total 616 out of 800 male and female dental students from various dental colleges based in Riyadh city took part in this study. The questions asked in the survey were (1) Do you regularly make diagnostic or preliminary impressions before tooth preparation?, (2) If yes, what impression material do you regularly use to make diagnostic or preliminary impressions?, (3) Do you routinely use gingival displacement or retraction prior taking final impression?, (4) If you use gingival displacement or retraction, what type of gingival retraction do you routinely use?, (5) If combinations are used, choose what you are using? (choose more than one), (6) If you use gingival retraction cord, how do you use it?, (7) If chemical is used, please specify which one is used, (8) Do you know the difference between single and double retraction cord techniques?, (9) What type of tray do you use for final impression making?, (10) Which material do you routinely use for final impression taking?, (11) When taking final impression, you use the material based on?, (12) In your practice, what do you think is the most common reason of failure in taking final impression?, and (13) Do you give provisional prosthesis after tooth preparation for all the patients?. All the participants confidentially answered the questionnaire and submitted successfully. After all the survey questionnaires were received, data are collected and recorded anonymously.

Obtained data were analyzed using SPSS software (version 22) to conduct descriptive and inferential statistics. Comparisons between groups were made by using Chi-square test with significance level at <0.05.

**Results**

After evaluating the survey results it was found that most of the dental students use recommended impression materials and techniques. Total 616 dental students from all over Riyadh city took part in this survey. Table 1 shows the gender distribution and it was observed that 52.9% were males and 47.1% females. On the other hand, participants were also divided on the basis
of their education level, which reported that 26% belonged to fourth year of dentistry, 25.8% to fifth year, and 48.2% were working as interns as shown in Table 2. Figures 1 and 2 show graphical presentation of demographic data.

Table 3 shows the comparison of survey responses on the basis of gender, which includes both significant as well as insignificant variables. It was noted from the findings that 88% male students used alginate for diagnostic impressions, which was statistically significant and lower than females (94%). Females also reported to have used gingival retraction cord more than the males ($P$ value: 0.027). Ten percent males revealed to have used a combination of gingival retraction methods as compared to 5% females and this comparison was also statistically significant ($P$ value: 0.001). In the case of chemicals used for gingival retraction, 49% males used aluminum chloride against 43% females and this difference was statistically significant ($P$ value: 0.007). When the use of impression trays was concerned, 61% males used custom trays as compared to 48% females, which was statistically significant ($P$ value: 0.008). Finally, 73% of the male students reported that clinical error is the main reason of failure in achieving accurate final impression as compared to 69% females and this difference was statistically significant ($P$ value: 0.020). Figure 3 shows graphical presentation of comparison of questionnaire responses based on gender of participants.

When the responses on the basis of educational year were compared as shown in Table 4, analysis revealed majority of statistically insignificant comparisons. Ninety-one percent of the interns reported that they used gingival cord for retraction as compared to 81% fourth-year students, with the difference being statistically significant ($P$ value: 0.016). Another significant comparison was established ($P$ value: 0.006) where 50% of the fourth-year students used aluminum chloride for gingival retraction as compared to 42% interns. Regarding the types of trays used for final impression, 40% interns used plastic trays as compared to 29% of fifth-year students with this difference being statistically significant ($P$ value: 0.000). When the material for final impression was concerned, 68% of interns used addition silicon as compared to 57% fourth-year students and this comparison was statistically significant ($P$ value: 0.007). Finally, 45% interns revealed that they used their previous experience while taking final impression as compared to 29% fourth-year students, which was statistically significant ($P$ value: 0.001). Figure 4 shows graphical presentation of comparison of questionnaire responses based on educational level of participants.

### Discussion

This cross-sectional study was conducted to evaluate the choices and preferences of dental students about the use of various materials and techniques that aid in taking different types of impressions in fixed prosthodontics treatment. It was noted from the results of this study that there are few statistically significant differences between the subgroups of study participants when divided based on gender and education. The results revealed that most of the study participants (57–68%) used addition silicon as the material of choice when taking final impression. However, a study conducted in Pakistan reported that more than 90% of their participants used alginate as a material of choice for final impression.[6]

When the preference of trays for final impression was concerned, it was revealed that around 55% of participants preferred using a custom tray instead of metallic or plastic prefabricated trays. On the other hand, a study conducted by Vohra et al. (2015) reported that more than 65% of their study participants were in favor of custom trays for taking final impression, which is higher than the findings of this study.[7] Moreover, in order to take the primary impressions, study participants preferred alginate impression material (91%) as a first choice. However, a study conducted in the University of Medical Sciences, Tabriz, Iran, reported even higher number of study participants (96%) using alginate as the material of choice for primary impression.[8] Another study done by Moldi et al. (2013) states that 29% of dental practitioners do not take diagnostic or preliminary impressions and directly proceed with tooth preparation after clinical intraoral examination.[11] Similar study conducted in Khartoum showed that alginate (68.2%) was the most commonly used impression material.[12]
When analyzed regarding the choice of material used for gingival retraction, it was revealed that exceedingly high number of participants (85%) reported to have preferred gingival retraction cord, whereas a similar study conducted in Romania among their dental students revealed that around 78% chose retraction cord as the material of choice for gingival retraction. It was also noted in their findings that 56% of the undergraduate dental students used addition silicone as the material of choice for final impression and...
**Table 3: Gender comparison of study participants**

| Survey questions                                                                 | Responses obtained                                                                 | Male (n) (%) | Female (n) (%) | Significance *P |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------|----------------|----------------|
| Do you routinely make diagnostic impressions before tooth preparation?            | Yes                                                                                 | 94           | 92             | 0.383          |
|                                                                                  | No                                                                                   | 6            | 8              |                |
| If yes, what impression material do you routinely use to make diagnostic impressions? | Addition silicone                                                                   | 6            | 3              | 0.048          |
|                                                                                  | Condensation silicone                                                               | 1            | 1              |                |
|                                                                                  | Polyether                                                                            | 1            | 0              |                |
|                                                                                  | Polysulfide                                                                          | 2            | 0              |                |
|                                                                                  | Irreversible hydrocolloid (alginate)                                                | 88           | 94             |                |
|                                                                                  | I do not know                                                                        | 2            | 0              |                |
| Do you routinely use gingival retraction prior taking final impression?          | Yes                                                                                 | 83           | 89             | 0.027          |
|                                                                                  | No                                                                                   | 17           | 11             |                |
| If you use gingival retraction, what type of gingival retraction do you routinely use? | Gingival retraction cord                                                            | 82           | 94             | 0.001          |
|                                                                                  | Electrosurgery                                                                       | 1            | 0              |                |
|                                                                                  | Laser                                                                                | 1            | 0              |                |
|                                                                                  | Rotary curettage                                                                     | 0            | 0              |                |
|                                                                                  | Gingival retraction paste                                                            | 3            | 0              |                |
|                                                                                  | Combination                                                                          | 10           | 5              |                |
|                                                                                  | I do not know                                                                        | 3            | 0              |                |
| If combinations are used, choose what you are using? (Choose more than 1)        | Gingival retraction cord and gingival retraction paste                               | 93           | 85             | 0.151          |
|                                                                                  | Gingival retraction cord, rotary curettage, and gingival retraction paste             | 0            | 8              |                |
|                                                                                  | Electrosurgery and rotary curettage                                                  | 7            | 0              |                |
| If you use gingival retraction cord, how do you use it?                          | Plain                                                                               | 17           | 17             | 0.980          |
|                                                                                  | With chemical                                                                        | 79           | 80             |                |
|                                                                                  | I do not know                                                                        | 3            | 3              |                |
| If chemical is used, please specify which one is used?                           | ferric sulfate (like ViscoStat)                                                      | 28           | 26             | 0.007          |
|                                                                                  | Aluminum chloride (like hemodent)                                                    | 49           | 43             |                |
|                                                                                  | Tannic acid 20-100%                                                                  | 3            | 0              |                |
|                                                                                  | Racemic epinephrine (like Orostat)                                                   | 13           | 14             |                |
|                                                                                  | I do not know                                                                        | 7            | 17             |                |
| Do you know the difference between single and double retraction cord techniques? | Yes                                                                                 | 93           | 93             | 0.939          |
|                                                                                  | No                                                                                   | 7            | 7              |                |
| What type of tray you prefer to use for final impression taking?                 | Prefabricated tray (plastic)                                                        | 29           | 38             | 0.008          |
|                                                                                  | Metal tray                                                                           | 11           | 13             |                |
|                                                                                  | Custom tray                                                                          | 61           | 48             |                |
| Which material do you routinely use for final impression taking?                 | Addition silicone                                                                   | 61           | 66             | 0.708          |
|                                                                                  | Condensation silicone                                                               | 11           | 11             |                |
|                                                                                  | Polysulfide                                                                          | 13           | 12             |                |
|                                                                                  | Polyether                                                                            | 8            | 5              |                |
|                                                                                  | Irreversible hydrocolloid (alginate)                                                | 3            | 3              |                |
|                                                                                  | I do not know                                                                        | 4            | 3              |                |
| When taking final impression, you use the material based on?                    | Your knowledge and previous experience                                              | 40           | 39             | 0.992          |
|                                                                                  | The manufacture instruction                                                         | 44           | 43             |                |
|                                                                                  | Consultation                                                                         | 17           | 17             |                |
| In your practice, what do you think is the most common reason of failure in taking final impression? | Clinical error                                                                      | 73           | 69             | 0.020          |
|                                                                                  | Laboratory error                                                                    | 5            | 6              |                |
|                                                                                  | Patient's mental attitude                                                            | 3            | 9              |                |
|                                                                                  | Improper oral hygiene maintenance                                                   | 11           | 11             |                |
|                                                                                  | No, shortcomings observed                                                            | 7            | 5              |                |
| Do you give provisional prosthesis after tooth preparation for all the patients? | Yes                                                                                 | 90           | 90             | 0.750          |
|                                                                                  | No                                                                                   | 10           | 10             |                |

*P* value is significant at <0.05.

22% preferred condensation silicone. On the contrary, this study participants revealed that 60% used addition silicone and only 10% preferred using condensation silicone, which is quite lower than the Romanian study. Similar study conducted by Al Houmaidan et al. in Qasim region of Saudi Arabia reported that 40.3% of dental practitioners always used retraction cord and 38.3% of them used polyvinyl siloxane for making final impressions.

Interestingly, the findings of this study showed that majority of dental students (90%) and interns preferred using retraction cord.
Table 4: Level of education comparison of study participants

| Survey questions                                                                 | Responses obtained                                                                 | Fourth year (n) (%) | Fifth year (n) (%) | Interns (n) (%) | Significance *P |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------|-------------------|----------------|-----------------|
| Do you routinely make diagnostic impressions before tooth preparation?          | Yes                                                                                  | 91                  | 95                | 93             | 0.426           |
|                                                                                 | No                                                                                   | 9                   | 5                 | 7              |                 |
| If yes, what impression material do you routinely use to make diagnostic        | Addition silicone                                                                    | 3                   | 7                 | 4              | 0.796           |
| impressions?                                                                     | Condensation silicone                                                                 | 1                   | 1                 | 1              |                 |
|                                                                                | Polyether                                                                            | 1                   | 1                 | 1              |                 |
|                                                                                | Polysulfide                                                                          | 1                   | 1                 | 1              |                 |
|                                                                                | Irreversible hydrocolloid (alginate)                                                 | 92                  | 91                | 91             |                 |
|                                                                                | I do not know                                                                        | 1                   | 0                 | 1              |                 |
| Do you routinely use gingival retraction prior taking final impression?         | Yes                                                                                  | 86                  | 84                | 87             | 0.746           |
|                                                                                 | No                                                                                   | 14                  | 16                | 13             |                 |
| If you use gingival retraction, what type of gingival retraction do you routinely use? | Gingival retraction cord                                                               | 81                  | 90                | 91             |                 |
|                                                                                | Electrosurgery                                                                       | 0                   | 0                 | 1              | 0.016           |
|                                                                                | Laser                                                                                | 1                   | 0                 | 0              |                 |
|                                                                                | Rotary curettage                                                                     | 1                   | 0                 | 0              |                 |
|                                                                                | Gingival retraction paste                                                             | 4                   | 1                 | 1              |                 |
|                                                                                | Combination                                                                          | 9                   | 7                 | 7              |                 |
|                                                                                | I do not know                                                                        | 3                   | 3                 | 0              |                 |
| If combinations are used, choose what you are using? (Choose more than 1)       | Gingival retraction cord and gingival retraction paste                                | 92                  | 78                | 95             | 0.101           |
|                                                                                | Gingival retraction cord, rotary curettage, and gingival retraction paste             | 8                   | 0                 | 0              |                 |
|                                                                                | Electrosurgery and rotary curettage                                                   | 0                   | 22                | 0              |                 |
| If you use gingival retraction cord, how do you use it?                        | Plain                                                                                | 16                  | 19                | 17             |                 |
|                                                                                | With chemical                                                                        | 78                  | 78                | 81             | 0.068           |
|                                                                                | I do not know                                                                        | 7                   | 4                 | 1              |                 |
| If chemical is used, please specify which one is used?                         | Ferric sulfate (like ViscoStat)                                                       | 31                  | 24                | 26             |                 |
|                                                                                | Aluminum chloride (like Hemodent)                                                     | 50                  | 50                | 42             | 0.006           |
|                                                                                | Tannic acid 20-100%                                                                  | 2                   | 0                 | 3              |                 |
|                                                                                | Racimic epinephrine (like Orostat)                                                    | 9                   | 7                 | 19             |                 |
|                                                                                | I do not know                                                                        | 8                   | 19                | 10             |                 |
| Do you know the difference between single and double retraction cord techniques? | Yes                                                                                  | 90                  | 92                | 95             | 0.084           |
|                                                                                 | No                                                                                   | 10                  | 8                 | 5              |                 |
| What type of tray you prefer to use for final impression taking?               | Prefabricated tray (plastic)                                                         | 24                  | 29                | 40             |                 |
|                                                                                | Metal tray                                                                           | 8                   | 9                 | 16             | 0.000           |
|                                                                                | Custom tray                                                                          | 68                  | 62                | 44             |                 |
| Which material do you routinely use for final impression taking?              | Addition silicone                                                                    | 57                  | 62                | 68             |                 |
|                                                                                | Condensation silicone                                                                 | 9                   | 10                | 12             | 0.007           |
|                                                                                | Polyether                                                                            | 18                  | 13                | 9              |                 |
|                                                                                | Polysulfide                                                                          | 8                   | 4                 | 7              |                 |
|                                                                                | Irreversible hydrocolloid (alginate)                                                 | 6                   | 3                 | 2              |                 |
|                                                                                | I do not know                                                                        | 3                   | 8                 | 2              |                 |
| When taking final impression, you use the material based on?                  | Your knowledge and previous experience                                               | 29                  | 40                | 45             |                 |
|                                                                                | The manufacture instruction                                                           | 47                  | 39                | 44             | 0.001           |
|                                                                                | Consultation                                                                         | 24                  | 21                | 11             |                 |
| In your practice, what do you think is the most common reason of failure in    | Clinical error                                                                       | 74                  | 75                | 67             |                 |
| taking final impression?                                                       | Laboratory error                                                                     | 6                   | 2                 | 7              | 0.152           |
|                                                                                | Patient’s mental attitude                                                             | 6                   | 8                 | 5              |                 |
|                                                                                | Improper oral hygiene maintenance                                                    | 10                  | 11                | 12             |                 |
|                                                                                | No shortcomings observed                                                              | 4                   | 5                 | 8              |                 |
| Do you give provisional prosthesis after tooth preparation for all the patients? | Yes                                                                                  | 89                  | 94                | 89             |                 |
|                                                                                 | No                                                                                   | 11                  | 6                 | 11             | 0.185           |

*P value is significant at <0.05

for the purpose of gingival retraction and merely 3% of them preferred the gingival retraction paste. Similar findings were reported by Karunakar Shetty et al. in Makkah region of Saudi Arabia that 80% of dentists were using retraction cord for gingival retraction, whereas only 5% of them using electrosurgery and 6.6% of them were using gingifoam and the study participants who were using retraction cord along with hemostatic agent comprised 94.5% and plain were 5.5%. It is worth noting that
the performance of gingival retraction paste has been proven to be much better as compared to retraction cord when it comes to the protection of periodontal tissue health. Therefore, it is important to educate our students about the most effective materials to be used during prosthodontic procedures in order to provide the best possible treatment outcome for the patients.

**Conclusion**

Within the limitations of this study, it can be concluded from present investigations that the dental students in Riyadh city have a strong inclination toward a particular material for primary or secondary impressions or gingival retraction options and it was found that most of the dental students consistently follow recommended impression materials and techniques. Most of the students are using standard procedures for impression techniques and materials, including alginate for diagnostic impressions, gingival retraction, and polyvinyl-siloxane material for final impressions. However to further enhance the knowledge and proficiency, there is a need to encourage and instruct them about the use of various materials having different properties and advantages and to be informed about recent advances in prosthodontics through continuous education in order to provide the best care and treatment for patients.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Yalavarthi S, Ashok V, Jain AR. Knowledge, attitude, and practice survey on temporization following tooth preparation among Indian dental practitioners. Drug Invention Today 2019;11:2131-5.
2. Kannan A, Venugopalan S, Ganapathy DM, Jain AR. A knowledge, attitude, and practice survey on the methodology followed in the fabrication of fixed partial denture amongst private practitioners. Drug Invention Today 2018;10:1349-56.
3. Hamalian TA, Nasr E, Chidiac JJ. Impression materials in fixed prosthodontics: Influence of choice on clinical procedure. J Prosthodontics 2011;20:153-60.
4. Keerthna M, Dhanraj M, Jain AR. Knowledge on impression techniques and materials used in fixed partial dentures-A survey among dental practitioners in Chennai. Drug Invention Today 2018;10:703-6.
5. Samejo I, Shaikh IA, Behroz E. Impression techniques and materials used for fixed partial denture fabrication: A survey among general dental practitioners and specialists in Sindh. Pakistan Oral & Dental Journal 2016; 36: 673-76.
6. Hanif A, Khan, Bangash MFK. Impression techniques and materials used for fabrication of complete denture: A survey. Pakistan Oral & Dental Journal 2014;34:170-173.
7. Vohra F, Rashid H, Hanif A, Ghani SM, Najeef S. Trends in complete denture impressions in Pakistan. J Ayub Med Coll Abbottabad 2015;27:108-12.
8. Koodaryan R, Hafezeqoran A. Attitude of dental practitioners towards complete denture impression procedures. Biomed Pharmacol J 2016;9:345-348.
9. Luchian I, Maru I, Ioanid N, Surlari Z, Diaconu-Popa D, Viñalariu A, et al. An evaluation of different gingival eviction techniques used by dental students worldwide. Romanian Journal of Oral Rehabilitation 2017;9:94-98.
10. Wang Y, Fan F, Li X, Zhou Q, He B, Huang X, et al. Influence of gingival retraction paste versus cord on periodontal health. A systematic review and meta-analysis. Quintessence Int 2019;50:234-44.
11. Moldi A, Gala V, Purank S, Karan S, Deshpande S, Neela N. Survey of impression materials and techniques in fixed partial dentures among the practitioners in India. ISRN Dent 2013;1:5. doi: 10.1155/2013/430214.
12. Mohamed AB, Abu-Bakr NH. Assessment of crown and bridge work quality among Sudanese dental practitioners. J Indian Prosthodont Soc 2010;10:53-6.
13. Al Houmaidan A, Mohan MP, Doumani M. The knowledge, attitude and practice of fixed prosthodontics: A survey among Qassim dental practitioners. J Family Med Prim Care 2019;8:2882-7.
14. Karunakar S, Othman W, Mohammed W, Narendra B, Rahul S. Survey of impression materials and techniques used for fixed partial prosthesis fabrication among the dental practitioners—A pilot study in Makkah region of Saudi Arabia. Int J Adv Res 2019;7:815-24.