



A Comprehensive Assessment of Relative Awareness About Various Implant Impressions and Their Outcomes in Anterior Esthetic Region: An Original Research Study

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KEYWORDS

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ABSTRACT:

Background and Aim: Dental implant therapy is highly liable to be compromised if attempted inaccurately. Ultimate esthetic outcome of anterior implant rehabilitation solely related to efficient impressions and their accurate reproductions in different laboratory stages. Poorly designed anterior implant prosthesis can be rejected by patient due to unacceptable esthetics. Therefore this questionnaire based study was planned and conducted to assess the relative awareness about various implant impressions and their outcomes in anterior esthetic region.

Materials and Methods: Authors firstly contacted 100 nearby leading dental practitioners. The contact details were obtained by the registry of regional dental association. Simple random method for sample selection procedure was used. All willing practitioners were asked to honestly response on all 7 questions within a time period of one month. Questions were about implant and their esthetic outcomes in maxillary anterior region. Participants were asked for the knowledge and awareness about open tray and closed tray implant impression, use of straight and angulated abutment, esthetic acceptance of patient. Statistical analysis was conducted to figure-out the inferences and results. P value less than 0.05 was taken as significant.

Statistical Analysis and Results: Basic statistical analysis with SPSS statistical package for the Social Sciences. Out of 100 studied practitioners, 64 were males and 36 were females. 70 practitioners had Knowledge and awareness about open tray and closed tray implant impression. 35 practitioners have Knowledge and awareness about the use of straight and angulated abutment. Level of significance evaluation using “Pearson Chi-Square” test showed P value which was highly significant for question number 1 and 7. For question no.1, statistical mean was 2.31, standard deviation was 0.029, standard error was 0.835. Assessment with one-way ANOVA revealed highly imperative and significant (0.001).



Conclusion: It was concluded that the participant doctors had fair levels of knowledge and awareness about various implants impressions and their outcomes in anterior esthetic region. Many of the participant doctors were aware of the open and closed tray impression methods along with usage of transfer impression coping, gingival mask, emergence profile.

Introduction

Precise and passive fitting implant prosthesis is considered ideal for its long term success. Most of the implant failures are because of poorly designed implant prosthesis.^{1,2} Additionally, fabrication of perfect prosthesis solely depends upon the accurateness of all the steps involved.^{3,4,5} It mainly includes use of impression transfer coping and selection of right impression technique. Open and closed tray impression techniques are used frequently for making of impressions.⁶⁻⁸ The choice of open or closed tray techniques is decided primarily by several factors. These include the availability and extent of masticatory load, esthetic requirements, need of angulated abutments and overall habit of patients. In this modern era, many of the clinicians are practicing implant therapy. With the ever increasing life expectancy, patients are also inclined towards more conservative approaches.⁹⁻¹¹ Implant treatment does not involve any meticulous preparation of adjacent tooth therefore it is the favorite choice of patients those requiring replacement of missing teeth.¹²⁻¹⁴ Still, there is an apparent need to find-out the present status of awareness about all these entities. In view of all these intermingling facts, authors planned and conducted this questionnaire based study to assess the relative awareness about various implants impressions and their outcomes in anterior esthetic region.

Materials and Methods

The study was planned in the department of Prosthodontics of the institute wherein responses were studied and analyzed for various implants impressions in anterior esthetic region. For data collection, authors firstly contacted 100 nearby leading dental practitioners particularly prosthodontists. Initially, total 120 private dental practitioners were approached. However, 15 practitioners did not response back so they were excluded from the study. Additionally, incompletely filled forms and responses were also exclude from the study. All entities related to

participants privacy and human rights were kept absolutely confidential and not disclosed elsewhere. The contact details were obtained by the registry of regional dental association. Authors utilized simple random method for sample selection procedure. All practitioners were approached electronically by emailing them an online response form. This form has contained basic demographic and contact details of participating doctors and preset questionnaire. All willing participants were requested to truthfully response on all 7 questions within a time frame of one month. Questions were especially designed and related to implant and their esthetic outcomes in maxillary anterior region. Participants were asked for the knowledge and awareness about open tray and closed tray implant impression, use of straight and angulated abutment, esthetic acceptance of patient, employment of transfer impression coping during prosthesis fabrication, usages of gingival mask material for effective reproduction of esthetic, assurance and maintenance of emergence profile, considerations of maxillary lip profile. The possible advantages and disadvantages of the study were explained to all participating practitioners via emails. All queries of participants were also addressed and resolved through reply emails. Informed consents were obtained from all doctors through checkbox tick and agree method. Data was collected by closed ended questionnaire and it's compiled master excel sheet. Statistical analysis was conducted to outline the inferences and results. P value less than 0.05 was taken as significant.

Statistical Analysis and Results

All the observed data were checked for any possible incorporated error. Thereafter data was subjected to basic statistical analysis with SPSS statistical package for the Social Sciences version 22 for Windows. Nonparametric test, namely, chi-square test, was used for further data analysis; p-value. Out of 100 studied practitioners, 64 were males and 36 were females [Table 2, Graph 1]. P value was significant for the age



group 30-35 years (0.01). The overall p value was not significant for these calculated parameters (0.01). 70 practitioners possess Knowledge and awareness about open tray and closed tray implant impression. 35 practitioners have Knowledge and awareness about the use of straight and angulated abutment. 91 practitioners have positive Outlook for esthetic acceptance of patient. 71 practitioners have good Knowledge and awareness about employment of transfer impression coping during prosthesis fabrication. 65 practitioners have good Knowledge and awareness about the usages of gingival mask material for effective reproduction of esthetic. 58 practitioners have good Knowledge and awareness about the maintenance of emergence profile. 72 practitioners have satisfactory Knowledge and awareness about the considerations of maxillary lip profile (table 1). Table 3 demonstrates about

Fundamental statistical description with level of significance evaluation using "Pearson Chi-Square" test (for all 7 studied questions). P value was highly significant for question number 1 and 7. For question no.1, statistical mean was 2.31, standard deviation was 0.029, standard error was 0.835. For question no.2, statistical mean was 1.12, standard deviation was 0.321, standard error was 0.028. For question no.3, statistical mean was 2.24, standard deviation was 0.653, standard error was 0.212. For question no.4, statistical mean was 1.73, standard deviation was 0.202, standard error was 0.709. For question no.5, statistical mean was 2.01, standard deviation was 0.425, standard error was 0.526. Table 4 states about the assessment amongst all studied questions using one-way ANOVA. The results were highly imperative and significant (0.001).

Table 1: Demographic details of practitioners

| Variables | Number | P value |
|---|--------|---------|
| <u>Age</u> | | 0.01* |
| 30-35 | 15 | |
| 36-40 | 41 | |
| 41-45 | 20 | |
| 46-50 | 16 | |
| 51-55 | 08 | |
| <u>Gender</u> | | |
| Male | 36 | |
| Female | 64 | |
| <u>Monthly Income</u> | | |
| Low | 15 | |
| Medium | 50 | |
| High | 35 | |
| <u>Location</u> | | |
| Rural area | 78 | |
| Urban area | 22 | |
| <u>Knowledge and awareness about open tray and closed tray implant impression</u> | | |
| Yes | 70 | |
| No | 30 | |
| <u>Knowledge and awareness about the use of straight and angulated abutment</u> | | |
| Yes | 35 | |
| No | 65 | |
| <u>Outlook for esthetic acceptance of patient</u> | | |
| Yes | 91 | |
| No | 9 | |



| | | |
|--|----|--|
| <u>Knowledge and awareness about employment of transfer impression coping during prosthesis fabrication</u> | | |
| Yes | 71 | |
| No | 29 | |
| <u>Knowledge and awareness about the usages of gingival mask material for effective reproduction of esthetic</u> | | |
| Yes | 65 | |
| No | 35 | |
| <u>Knowledge and awareness about the maintenance of emergence profile</u> | | |
| Yes | 58 | |
| No | 42 | |
| <u>Knowledge and awareness about the considerations of maxillary lip profile</u> | | |
| Yes | 72 | |
| No | 28 | |

Table 2: Age & gender based statistical description of contributing practitioners

| Age Group (Yrs) | Male | Female | Total | P value |
|-----------------|------|--------|-------|--------------|
| 30-35 | 10 | 05 | 15 | 0.01* |
| 36-40 | 25 | 16 | 41 | 0.32 |
| 41-45 | 14 | 06 | 20 | 0.90 |
| 46-50 | 11 | 05 | 16 | 0.10 |
| 51-55 | 04 | 04 | 08 | 0.50 |
| Total | 64 | 36 | 100 | *Significant |

*p<0.05 Significant

Graph 1: practitioner’s demographic allocation and related details

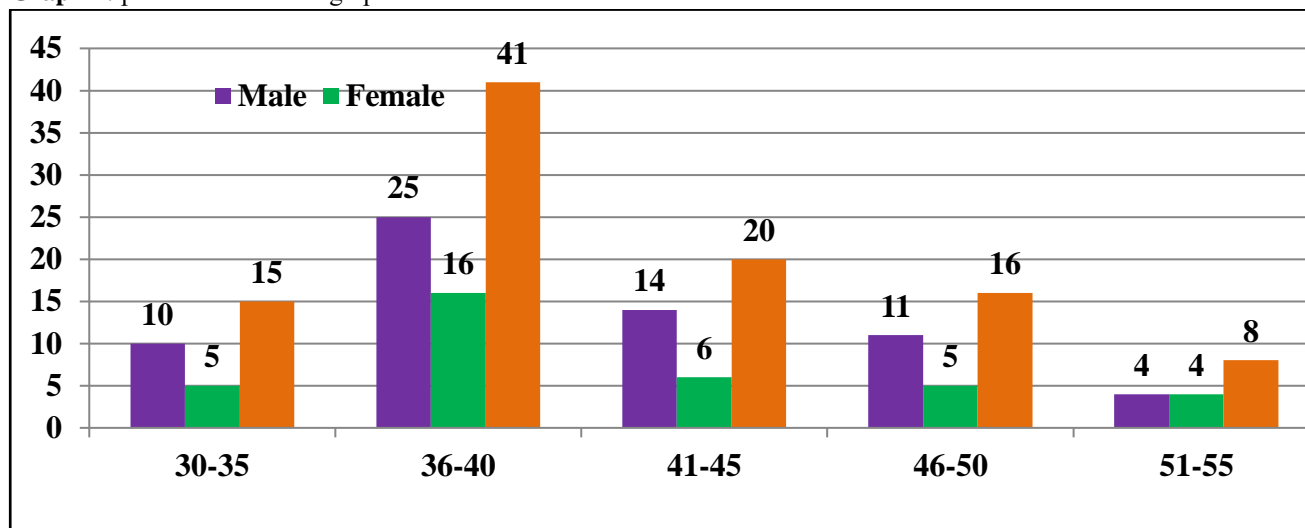




Table 3: Fundamental statistical description with level of significance evaluation using “Pearson Chi-Square” test (for all 7 studied questions)

| Question No | Stat. Mean | Std. Deviation | Std. Error | 95% CI | Pearson Chi-Square Value | df | p value |
|-------------|------------|----------------|------------|--------|--------------------------|-----|---------|
| 1 | 2.31 | 0.029 | 0.835 | 1.96 | 1.049 | 1.0 | 0.01* |
| 2 | 1.12 | 0.321 | 0.028 | 1.02 | 1.637 | 2.0 | 0.09 |
| 3 | 2.24 | 0.653 | 0.212 | 1.18 | 1.122 | 1.0 | 0.08 |
| 4 | 1.73 | 0.202 | 0.709 | 1.52 | 1.373 | 1.0 | 0.82 |
| 5 | 2.01 | 0.425 | 0.526 | 1.34 | 1.324 | 2.0 | 0.90 |
| 6 | 1.62 | 0.403 | 0.302 | 1.83 | 1.038 | 1.0 | 0.10 |
| 7 | 2.41 | 0.625 | 0.324 | 1.96 | 1.038 | 1.0 | 0.02* |

***p<0.05 significant**

Table 4: Assessment amongst all studied questions using one-way ANOVA

| Variables | Degree of Freedom | Sum of Squares Σ | Mean Sum of Squares $m\Sigma$ | F | Level of Sig. (p) |
|-------------------|-------------------|-------------------------|-------------------------------|-----|-------------------------------|
| Between Questions | 2 | 2.845 | 1.647 | 1.2 | 0.001* |
| Within Questions | 18 | 2.546 | 0.033 | | - |
| Cumulative | 153.10 | 12.945 | | | *p<0.05 significant |

Discussion

Many of the researchers in the recent past has extensively worked out on the esthetic outcomes of open tray and closed tray implant impressions.¹⁵⁻¹⁹ Various schools of thoughts have been discussed and supported by clinical evidences. Implant therapy no more new for clinicians and leading practitioners.²⁰⁻²⁷ However, in most of the instances the laboratory part is completed in hurry which compromises accuracy. Assuncao and other workers evaluated the transfer impressions for osseointegrated implants at various angulations.²⁸ They concluded that change of angulations of transfer impression coping affects the overall esthetic outcomes. This inference was also supported by other pioneer studies and reasercehes.^{5,7,9} Mpikos et al checked the apparent effect of impression technique and implant angulation on the impression accuracy of external and Internal connection implants. These findings were highly comparable and imperative from esthetic point of views.²⁹ Akalin assessed the effects of implant angulation, impression material, and changes in arch curvature width on implant transfer model accuracy. They also agreed that change in implant angulation require to change the impression technique.³⁰ This is primarily done to best capture the minute records. Alikhasi and coworkers studied in

detail about the three-dimensional accuracy of implant and abutment level impression techniques. They also stated that most of the researchers were aware of the open and close tray technique.³¹ Filho and others also estimated about the correctness of impression techniques for implants. Their study participants were also well aware of most of the impressions steps and techniques of implant prosthesis.³² Assunção and others studied about the prosthetic transfer impression accuracy evaluation for osseointegrated implants. Their results were highly significant and comparable.³³ They also stressed about the importance of emergence profile and clinical usage of gingival mask. Several other studies have also aimed to outline these clinical information and outcomes.³⁴⁻³⁸

Conclusion

Within the limitations of the study, authors concluded highly significant outcomes and results. They stated that the studied participants had fair levels of knowledge and awareness about awareness about various implants impressions and their outcomes in anterior esthetic region. Most of the studied participant doctors have good knowledge about the open and closed tray impression methods along with usage of transfer impression coping, gingival mask, emergence



profile. So, in general it was outlined that practitioners are usually o alert mode while rehabilitating maxillary anterior region with implant prosthesis. This is also interrelated with the high esthetic demand and concerns of patients under treatment. Nevertheless, inferences and recommendations of the study must also be correlated clinically before executing implant therapy in maxillary anterior region. Authors also anticipate other long term studies to be performed so as to establish other noteworthy guidelines in these regards.

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