

## Knowledge, Attitude and Practice of the Dental and Medical Practitioners Regarding Dental Implants

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### Abstract:

**Background:** Though dental implantology has become an important part of the replacement of the missing or lost teeth, the dental and medical practitioners are still lacking in the knowledge regarding dental implants. These practitioners are the major source of giving education to the community. As results, the awareness in the community about the dental implant as a treatment modality is less. Thus, there is a need to do the assessment of the level of the knowledge, attitude and practice of the dental and medical practitioners regarding dental implants, so that accordingly education sessions can be organized for the practitioners. This ultimately affects the education level regarding dental implants and quality of life of the community people.

**Materials and Methods:** The study was carried out in a group of 565 participants. Is included 323 dental and 242 medical practitioners. The study was done with the help of 25 well-formed questionnaires which included, 11 questions on knowledge of dental implants, 09 questions regarding attitude toward dental implant procedure, and 05 questions about the practice of dental implants by the dental practitioners. Comparative evaluation was done with the help of Student's *t*-test, using IBM SPSS statistics 20.

**Results:** The results shown that the dental practitioners were superior in knowledge of the dental implants as compared to medical practitioners, and the results were significant statistically (Student's *t*-test,  $P < 0.001$ ). The comparison between urban and rural practitioners had shown that the urban practitioners were

having more knowledge regarding dental implants (Student's *t*-test,  $P < 0.001$ ). Furthermore, the questionnaires about the attitude toward dental implants shown that there is need to improve the vision of the dental and medical practitioners regarding dental implants procedure. The evaluation of the practice of dental implant procedure was done in male and female dental practitioners and it also shown more positive practice of the dental implant procedures by the male practitioners and the difference was found to be significant statistically (Student's *t*-test,  $P < 0.001$ ).

**Conclusion:** There is a need to increase the knowledge, improve the attitude, and change the vision of practice of the dental implants. Hence, that, it can be beneficial to the patients.

**Key Words:** Dental implants, implant surgery, missing teeth, replacement of teeth

### Introduction

The well-being and quality of life is often affected by the common oral changes and conditions of the individuals.<sup>1</sup> The loss or removal of the one or more of the natural teeth may results in disabilities in daily living activities such as impaired eating, speaking, or social embarrassment. In such conditions, the role of the dental practitioner is very important regarding the choice of the replacement of the teeth.<sup>1</sup>

There are various treatment modalities are available for the replacement the teeth. Nowadays, the main goal of the modern dental treatments is to restore the patient's normal function, speech, esthetics, as well as health.<sup>2</sup> In the past few decades, the modern dentistry has changed tremendously due to the arrival of dental implants for the rehabilitation of the partially edentulous or completely edentulous jaws.<sup>2</sup>

It is becoming popular nowadays because of its success and predictability in esthetic, functional rehabilitation, and long-term successful outcomes.<sup>2-4</sup> Functional rehabilitation includes improvement in the masticatory efficiency, maintenance of bone, increased phonetics efficiency.<sup>2-4</sup> Furthermore, a significant improvement in the quality of life in relation to oral health is observed in patients treated with the dental implants for the replacement of the teeth.<sup>5</sup>

Despite of the impressive clinical results of dental implants, the key information is still missing in the education of the undergraduate students about the fundamentals of dental implants.<sup>6,7</sup> Dental implant therapy is an elective treatment

in many of the cases. Therefore, it is necessary to provide complete information about dental implants and its use for making an informed decision by the patients.<sup>2</sup>

Various survey reports on the dental implants had shown that the dentists are the primary source of information for patients on dental implants, followed by general practitioners, friends, and social media.<sup>2</sup> However, the information available to the patients about the dental implants procedure is still lacking or fragmentary, and this problem is due to the dentists, medical practitioners, and the other authorities concerned are not doing enough to educate and spreading awareness among people regarding dental implant procedure as a treatment modality.<sup>4</sup>

The patient's demands are also increasing regarding optimal esthetic and function of the implant supported the prosthesis. In addition, the media reports like "implant forever" or "implants last lifelong" results in higher, unrealistic patients' expectations.<sup>3,8</sup> This actually generates a potential need for the dental practitioners to be well informed and understand all aspects all of the dental implants.<sup>9</sup> The right kind of information, if channelized to the patients and community correctly, then it will further help in promoting this superior treatment as a treatment option among the patients.<sup>4</sup>

Therefore, for the practicing dentists and clinicians, it is imperative to have knowledge about dental implants as a treatment options, and the information should be close to the reality. Hence, this study was intended to know the level of understanding among the dental and medical practitioners regarding dental implant therapy.

### Materials and Methods

In this particular study total of 600 questionnaires were distributed, but only 565 given the responses. Thus, the study was included of 565 participants, out of which 323 were of dental practitioners, and 242 were medical practitioners. The dental participants included 172 male and 151 female participants while medical participants were consisted of 167 male and 75 female participants. The age groups of the participants were ranging from 22 to 45 years. The dental participants were also included of dental interns, but the specialties of all branches of dentistry were excluded from the study. The medical practitioners were included of practicing general and specialty practice.

The study was carried out with the help of 25 well-structured questionnaires, which were validated by doing pilot study for the evaluation of knowledge, attitude and practice of the dental and medical practitioners regarding dental implant treatment:

#### Questionnaires

I. Questionnaires related to the knowledge of the dental and medical practitioners about dental implants: It included 11 questions on the basic knowledge of the dental implants and the procedure of the dental implant. The questions

were in the form of "Yes/No" type and the multiple choice questions. The student was told to select the correct response. Each "Yes" and the correct answer was given "one" score while answer "No" or the wrong answer given "zero" score (Appendix 1).

- II. Questionnaires related to the attitude toward dental implant placement of the dental and medical practitioners: This section included 09 questions, which were of multiple choice questions and the evaluation was done based on the responses given by the participants (Appendix 2).
- III. Questionnaires related to the practice of dental implant placement of the dental practitioners: It includes 5 questions based on the practice of the dental implant procedures. In this section also "Yes/No" answer type questions were selected. For the scoring, "Yes" answer given score "one," except for the questions with marked as (N), for which score "one" was given for the answer "No" (Appendix 3). These questionnaires were given only to the dental practitioners.

Approval from the Ethical Committee was taken before the start of the study, and informed consent was also taken of all the participants.

#### Inclusive criteria

1. Dental practitioner practicing general dentistry
2. Dental interns
3. General medical practitioners
4. Specialty medical practitioners.

#### Exclusion criteria

1. Dental specialty of any branch
2. General dental practitioners who have done certificate course of implant dentistry.

#### Statistical analysis

Scores were calculated based on the responses given by participants. The individual scores were summed up to get a total score. Statistical analysis was performed with the help of IBM SPSS statistics 20, with the help of Student's *t*-test. Descriptive statistics was calculated, and mean scores and standard deviation were obtained.

#### Results and Observations

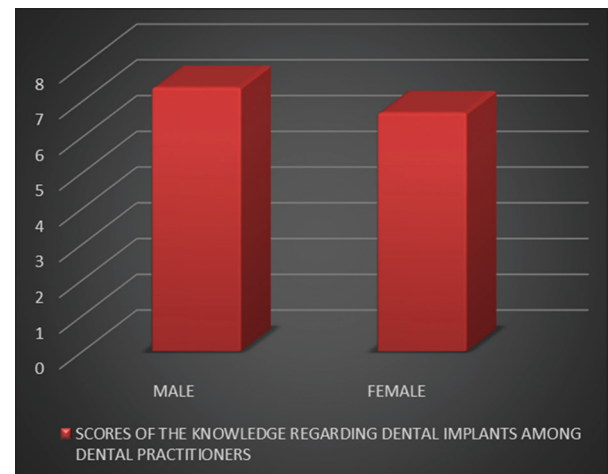
The study of the knowledge of dental implants, attitude toward implant procedure and practice of the dental implant placement was done with the help of comparative evaluation.

The comparison of the scores of the knowledge regarding dental implants between dental and medical practitioners shown a statistically highly significant difference (Student's *t*-test,  $P < 0.001$ ). This shown that the medical practitioners need to be educated regarding dental implants (Table 1 and Graph 1). When the comparison of the scores of the knowledge was done between male and female dental practitioners, it was found that the male dental practitioners are superior in

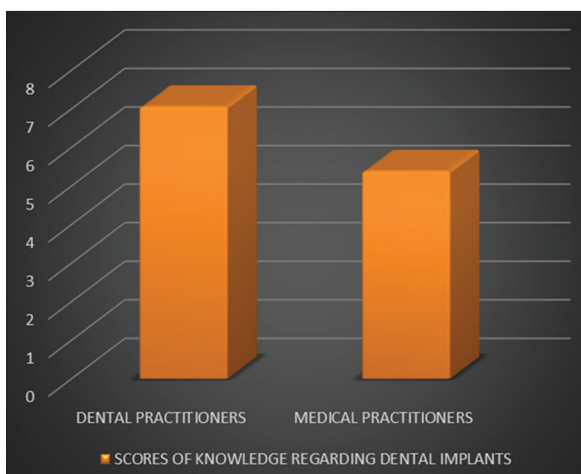
knowledge regarding dental implants, and the difference was found to be statistically highly significant (Student's *t*-test,  $P < 0.001$ ) (Table 2 and Graph 2).

However, the comparison of the scores of the knowledge of dental implants between male and female medical practitioners does not show a statistically significant difference (Student's *t*-test,  $P > 0.05$ ). This indicates that the male and female medical practitioner are equal in knowledge of dental procedure (Table 2 and Graph 3).

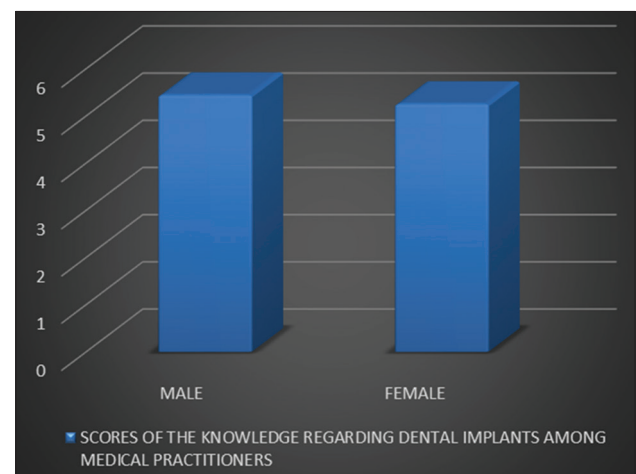
Furthermore, the comparison was done between urban and rural dental and medical practitioners, which shows that the urban practitioners, both dental and medical were superior in knowledge regarding dental implants as compared to the rural practitioners (Student's *t*-test,  $P < 0.001$  for dental and Student's



**Graph 2:** Comparison of the scores of the knowledge about dental implants between males and female dental practitioners.



**Graph 1:** Comparison of scores of the knowledge about dental implants between dental and medical practitioners.



**Graph 3:** Comparison of the scores of the knowledge about dental implants between males and female medical practitioners.

**Table 1:** Comparison between scores of the knowledge about dental implants between dental and medical practitioners (student's *t*-test).

| Group                 | Number of participants | Knowledge scores (mean±SD) | t value | Significance      |
|-----------------------|------------------------|----------------------------|---------|-------------------|
| Dental practitioners  | 323                    | 7.05±1.64                  | 13.1863 | $P < 0.001^{***}$ |
| Medical practitioners | 242                    | 5.38±1.23                  |         |                   |

\*\*\* $P < 0.001$  is statistically highly significant. SD: Standard deviation

**Table 2:** Comparison of the scores of the knowledge about dental implants between males and female dental and medical practitioners (student's *t*-test).

| Group                 | Male/Female | Number of participants | Knowledge scores (mean±SD) | t value | Significance      |
|-----------------------|-------------|------------------------|----------------------------|---------|-------------------|
| Dental practitioners  | Male        | 172                    | 7.38±1.62                  | 3.9542  | $P < 0.001^{***}$ |
|                       | Female      | 151                    | 6.67±1.60                  |         |                   |
| Medical practitioners | Male        | 167                    | 5.44±1.23                  | 1.1065  | $P > 0.05^*$      |
|                       | Female      | 75                     | 5.25±1.25                  |         |                   |

\* $P > 0.05$  is statistically insignificant. \*\*\* $P < 0.001$  is statistically highly significant. SD: Standard deviation

**Table 3:** Comparison of the scores of the knowledge about dental implants between urban and rural area dental and medical practitioners (student's *t*-test).

| Group                                  | Urban/Rural | Number of participants | Knowledge scores (mean±SD) | t value | Significance      |
|--|-------------|------------------------|----------------------------|---------|-------------------|
| Dental practitioners                   | Urban       | 205                    | 7.44±1.63                  | 4.2867  | $P < 0.001^{***}$ |
|  | Rural       | 108                    | 6.61±1.63                  |         |                   |
| Medical practitioners                  | Urban       | 161                    | 5.52±1.18                  | 2.1233  | $P < 0.01^{**}$   |
|  | Rural       | 81                     | 5.16±1.29                  |         |                   |
| Total dental and medical practitioners | Urban       | 366                    | 6.60±1.74                  | 3.9153  | $P < 0.001^{***}$ |
|  | Rural       | 189                    | 5.99±1.66                  |         |                   |

\*\*\* $P < 0.001$  is statistically highly significant. \*\* $P < 0.01$  is statistically significant. SD: Standard deviation

t-test,  $P < 0.01$  for medical practitioners) (Table 3 and Graph 4).

The study of the attitude toward dental implant procedure among dental and medical practitioners was assessed with the help of individual responses given by the participants as shown in Table 4.

Furthermore, the comparison of the scores of the practice of dental implants was made between male and female dental practitioners, which shown that the male dental practitioners

are more convincing in their practice of dental implants as compared to female, and the difference was found to be statistically significant (Student's t-test,  $P < 0.001$ ) (Table 5 and Graph 5).

### Discussion

Since, the introduction of the concept of the osseointegration to the dentistry at the year of 1982, Toronto conference, the dental implants procedure have been increasingly becoming popular for the replacement of the lost or missing teeth in a

**Table 4: Responses to questions about the level of attitude towards dental implants, by percentage of total respondents, by the dental and medical practitioners.**

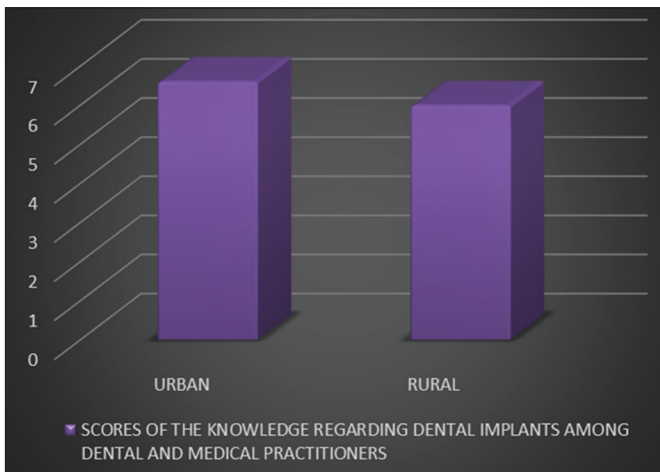
| Questions   | Responses by the dental participants in the percentage of the total $n=323$ (%) | Responses by the medical participants in the percentage of the total $n=242$ (%) |
|---|---|--|
| How do you rate the treatment charges involved in the dental implant placement procedure?<br>a. Affordable<br>b. Not affordable   | 45.1<br>54.9  | 56.3<br>43.7   |
| Are you willing to undergo dental implant procedure if it is needed as a treatment option?<br>a. Yes<br>b. No<br>c. Maybe/not sure  | 30.2<br>56.4<br>13.4  | 21.1<br>73.5<br>05.4   |
| If no, then what is the reason?<br>a. It is a costly procedure<br>b. It requires surgical approach<br>c. Not too clear about the procedure  | 33.5<br>27.2<br>39.3  | 23.4<br>23.7<br>52.9   |
| On a scale of 1-5, how difficult do you feel is it to place dental implants as compared to other dental procedures used for the replacement of the teeth?<br>a. 1=Very easy<br>b. 3=Average<br>c. 5=Very difficult  | 6.7<br>54.3<br>39.0   | 2.3<br>67.4<br>30.3  |
| What do you tell your patients about the longevity of dental implants?<br>a. 2-5 years<br>b. 5-10 years<br>c. 10-20 years<br>d. Lifetime<br>e. Do not know  | 2.4<br>45.2<br>20.1<br>22.2<br>10.1   | 9.9<br>34.6<br>20.4<br>14.4<br>20.7  |
| Do you think that procedure of dental implant for the replacement of teeth is an acceptable solution in the Indian scenario?<br>a. Yes, implants can be acceptable<br>b. No, economic feasibility might limit their usage<br>c. No, it is too invasive for patient acceptance<br>d. Do not know   | 23.1<br>55.5<br>4.2<br>17.2   | 42.2<br>23.3<br>2.2<br>32.3  |
| Will you like to gain more knowledge regarding dental implant and its placement procedure?<br>a. Yes<br>b. No   | 88.1<br>11.9  | 76.1<br>23.9   |
| According to you what are the reasons for not taking dental implant as a treatment option for replacing missing teeth by the patient, despite the advice by the dental practitioners?<br>a. It takes longer time<br>b. It is a very expensive treatment modality<br>c. Maybe because of fear of implant placement<br>d. It needs a surgical procedure<br>e. Lack of knowledge about dental implants | 13.3<br>25.4<br>12.2<br>11.6<br>37.5  | 9.1<br>33.4<br>5.5<br>4.8<br>47.2  |
| Do you think that the clinicians experience is important in the success of the dental implants?<br>a. Yes<br>b. No<br>c. Not sure   | 45.4<br>27.2<br>27.4  | 67.2<br>13.8<br>19.0   |



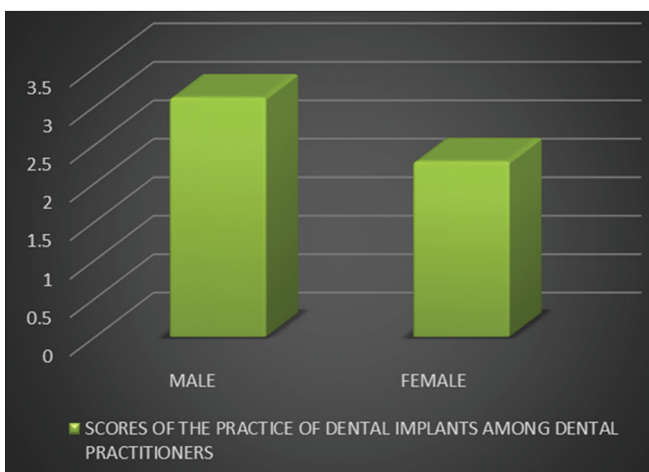
**Table 5: Comparison of the scores of the practice of dental implants between males and female dental practitioners (student's t-test).**

| Group                | Male/Female | Number of participants | Practice scores (mean±SD) | t value | Significance |
|----------------------|-------------|------------------------|---------------------------|---------|--------------|
| Dental practitioners | Male        | 172                    | 3.11±0.83                 | 8.1389  | P<0.001***   |
|                      | Female      | 151                    | 2.28±0.99                 |         |              |

\*\*\*P<0.001 is statistically highly significant. SD: Standard deviation



**Graph 4:** Comparison of the scores of the knowledge about dental implants between urban and rural area dental and medical practitioners.



**Graph 5:** Comparison of the scores of the practice of dental implants between males and female dental practitioners.

variety of clinical conditions.<sup>6</sup> In developed countries, with the help of various education and health related programs, dental implant therapy is becoming the focus of the patients' and dentists' interest.<sup>7</sup>

Accumulated evidence since years shown that the implant-supported prostheses are conservative and have predictable outcome with a long-term success rate in uncomplicated cases. It also ultimately improves the quality of life and self-confidence of the patient.<sup>6,10-12</sup>

Despite of this fact, the dental implant procedures are neglected in undergraduate curriculum of the dental and medical field. Because of this, the knowledge and awareness about dental

implant therapy are often misunderstood by the dental and medical practitioners itself, and as the dental and medical practitioners are the key personnel's in giving knowledge of such things to their patients, the key information about dental implants is lacking in the community.<sup>4,6</sup>

In this study, the knowledge, attitude and practice of the dental implant procedure among the dental and medical practitioner are evaluated through comparison between medical and dental practitioners. It shown that the dental practitioners are lacking in the knowledge regarding dental implants, but they have more knowledge than the medical practitioners, and the difference was found to be statistically extremely significant (Student's t-test,  $P < 0.001$ ). This indicates that the dental implant procedure education should be increased in these clinicians.

Chaudhary *et al.*<sup>2</sup> had shown that there are various factors important to the success of the dental implants like case selection, oral habits like smoking or any systemic disease like diabetes. This was also seen in our study, as 78.4% had knowledge about the factors affecting the success of the procedure.

In this study, 76.3% were responded positively that they were aware of the fact that the dental implants can be used to replace single tooth, which were in accordance to the study done by Prashanti and Mohan,<sup>6</sup> which also reported the same fact.

In general, the male clinical practitioners are more enthusiastic to do the new things. Thus, the comparison also done between male and female participants. It shown that the male dental practitioners had more knowledge than the female dental practitioners (Student's t-test,  $P < 0.001$ ). This shown that there was need improve the knowledge regarding dental implant treatment among the female dental practitioners. However, in the case of the medical practitioners, the difference between the male and female practitioners knowledge was not found to be statistically significant (Student's t-test,  $P > 0.05$ ), which indicated that the male and female medical practitioners had a similar level of knowledge.

Furthermore, the education level, approach to advanced techniques and financial situation is always different between rural and urban population and thus in the practicing clinicians. Thus, evaluation was also done between urban and rural practitioners. This shown that the urban practitioners are superior in the knowledge regarding dental implants and the difference was found to be statistically significant (Student's t-test,  $P < 0.001$ ).

The response to the treatment charges shown reverse response by dental and medical practitioners. 45.1% dental practitioner and 56.3% medical practitioner agree that the procedure is affordable. The response to the willingness of the undergoing dental implants procedure was negative, as most of the dental (56.4%) and medical (73.5%) practitioners were not willing to undergo dental implant treatment procedure and the main reason for this was that they were not clear about the procedure. This shown that there is a need to increase the awareness of the dental implant procedure.

Regarding the difficulty level, most of the dental (54.3%) and medical (67.4%) practitioner consider it was an average difficult procedure, and it can be practiced. Most of the practitioners (dental - 45.2%, medical - 34.6%) tell their patients that the longevity of the dental implants were 5-10 years, and most of the dental practitioners (55.5%) responded that the dental implant procedure was not an acceptable solution for the Indian scenario.

It was very positive attitude of both the dental (88.1%) and medical (76.1%) practitioners that they were willing to gain more knowledge regarding the procedure so that they can implement it in their clinical practice. This was in accordance to the study done by Chaudhary *et al.*,<sup>2</sup> which also reported willingness of the clinicians to gain more knowledge regarding dental implants.

Most of the dental as well medical practitioners agreed that the cost of the treatment was the main issue for the non-acceptance of the dental implant. Regarding the experience of the clinician, 45.4% dental and 67.2% of the medical practitioners had told that the clinical experience will affect the outcome or success of the dental implants. This result was in contradiction to the results by Chaudhary *et al.*<sup>2</sup> and Kohavi *et al.*,<sup>13</sup> which reported that the experience of the operator was not important for the success of the dental implants. However, our results are in accordance to the study done by Lambert *et al.*,<sup>14</sup> who demonstrated that dental implants placed by inexperienced dental surgeons were fail 2 times more likely than the experienced surgeon. On few occasions implant failure occurred due to peri-implant diseases.<sup>15</sup>

When the comparative evaluation was carried out of the practice of the dental implant procedure among the male and female dental practitioners, the male practitioner had shown more positive approach than the female practitioners and the difference was found to be statistically significant (Student's *t*-test,  $P < 0.001$ ).

Therefore, this study shown that though most of the dental and medical practitioners has knowledge about dental implants, positive attitude and practice, but still they are lacking in information. It is necessary to increase the education level of the community regarding the practice of dental implants so that

this treatment can be accepted by most of them and improve their quality of life.<sup>16</sup> For this, the knowledge level about dental implants, and the clinicians view toward the attitude and practice of dental implants should be changed. This can be done through various educational CDE program, workshops, and hands-on courses on dental implants.

As this study was carried out including limited clinicians, further detailed survey including more number of questionnaires and more number of clinicians should be done to validate the results of the present study.

### Conclusion

Regardless of whether the dental practitioners are dealing with implants or not, it is crucial to know whether they are aware of the dental implants as a treatment option and whether the information which they are having is realistic or not. Awareness among the dental and medical practitioners about dental implants can help in eliminating any negative image of the dental implant procedure in patient's mind due to lack of knowledge. As this study was done in limited participants, the large survey should be conducted in further studies to support these results.

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## APPENDIX

### Appendix 1

Questionnaires related to the knowledge of the dental and medical practitioners about dental implants:

1. Do you know that dental implants are the alternatives to the replacement of the teeth?
  - a. Yes
  - b. No.
2. Are you well informed about dental implants?
  - a. Well informed
  - b. Not well informed.
3. Have you seen patients with dental implants?
  - a. Yes.
  - b. No.
4. Do you know the advantages of the dental implants as compared to the other treatment modalities?
  - a. Yes
  - b. No.
5. Do you know the factors affecting the success of the dental implants?
  - a. Yes
  - b. No.
6. Do you know that the dental implants require additional oral hygiene maintenance care by the patient?
  - a. Yes
  - b. No.
7. Do you aware about the various problems during dental implant placement?
  - a. Yes
  - b. No.
8. Do you know the disadvantages of implant-supported dentures/bridges?
  - a. Yes
  - b. No.
9. Can implant be used to replace single missing tooth?
  - a. Yes
  - b. No.
10. Where are the implants anchored?
  - a. Gingiva
  - b. Jaw bone
  - c. Adjacent teeth.
11. Do you have the knowledge of the implant placement procedure?
  - a. Yes
  - b. No.

## Appendix 2

Questionnaires related to the attitude of the dental and medical practitioners towards dental implant placement:

1. How do you rate the treatment charges involved in the dental implant placement procedure?
  - a. Affordable
  - b. Not affordable.
2. Are you willing to undergo dental implant procedure if it is needed as a treatment option?
  - a. Yes
  - b. No
  - c. Maybe/not sure.
3. If no, then what is the reason?
  - a. It is a costly procedure
  - b. It requires surgical approach
  - c. Not too clear about the procedure.
4. On a scale of 1-5, how difficult do you feel is it to place dental implants as compared to other dental procedures used for the replacement of the teeth?
  - a. 1 = Very easy
  - b. 3 = Average
  - c. 5 = Very difficult.
5. What do you tell your patients about the longevity of dental implants?
  - a. 2-5 years
  - b. 5-10 years
  - c. 10-20 years
  - d. Lifetime
  - e. Do not know.
6. Do you think that procedure of dental implant for the replacement of teeth are an acceptable solution in the Indian scenario?
  - a. Yes, implants can be acceptable
  - b. No, economic feasibility might limit their usage
  - c. No, it is too invasive for patient acceptance
  - d. Do not know.
7. Will you like to gain more knowledge regarding dental implant and its placement procedure?
  - a. Yes
  - b. No.
8. According to you what are the reasons for not taking dental implant as a treatment option for replacing missing teeth by the patient, despite the advice by the dental practitioners?
  - a. It takes longer time
  - b. It is a very expensive treatment modality
  - c. Maybe because of fear of implant placement
  - d. It needs surgical procedure
  - e. Lack of knowledge about dental implants.
9. Do you think that the clinicians experience is important in the success of the dental implants?
  - a. Yes
  - b. No
  - c. Not sure.

## Appendix 3

Questionnaires related to the practice of dental implant placement by the dental practitioners:

1. Do you always look for missing teeth on clinical examination when patients report with any other complaint?
  - a. Yes
  - b. No.
2. Do you convince patient for the dental implant treatment for replacement of the missing teeth?
  - a. Yes
  - b. No.



3. Do you call specialist (implantologist) for the opinion regarding dental implants?
  - a. Yes
  - b. No.
4. Do you carry out diagnostic procedures for dental implant placement?
  - a. Yes
  - b. No.
5. Do you deny dental implant treatment for patients without knowing reasons?
  - a. Yes
  - b. No.