KNOWLEDGE AND CONFIDENCE OF DENTAL PRACTITIONERS REGARDING PLACEMENT OF IMPLANTS - A SURVEY

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Abstract

Modern implantology marks a great treatment innovation since edentulism is a frequent situation, especially in elderly people. Different types of implant-supported prostheses are available, depending on the number and position of implants, prosthetic design and material and type of retainer. The aim of this study is to assess the knowledge and confidence among dental practitioners regarding implant placement. The present study was conducted among dental practitioners across the country using a questionnaire. The questions were related to implantology. A total of 32 questions were included. Data was tabulated in excel. Statistical analysis was done in SPSS ver.20. Descriptive statistics were analysed. Chi-square test was done to evaluate association between number of years of practice and educational qualification of the participants and their responses. In the present study, there was significant association between experience of practitioners with knowledge and awareness regarding implants among practitioners. There was also significant association between practitioner qualification and his knowledge and awareness regarding implants.

Keywords: implant ,

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1. Introduction

Oral rehabilitation is delicate in terms of functional and esthetic outcomes and only an adequate material choice and processing can ensure long-term stability and patient satisfaction(1). Edentulism is the condition of being toothless to at least some degree. Loss of some teeth is called partial edentulism, whereas loss of all teeth is called complete edentulism.Edentulism can lead directly to impairment, functional limitation, physical, psychological, and social disability, and handicap(2–5).

Over the period of time, there have been many advancements in the field of Prosthodontics and the choice of treatment modality for replacement of missing teeth are many to choose from. But the ideal form of treatment for each individual changes from patient to patient, owing to multiple factors such as age, gender, physical condition, systemic illness, etc. The treatment options available are complete dentures, removable partial dentures, fixed partial dentures and implant supported prosthesis. The most common treatment option for long span edentulous areas are removable appliances. However, the degree of patient satisfaction tends to decrease during the first couple of years after insertion(6).

The application of endosseous implants is a well established method to achieve dental prosthesis support and retention in both partially and completely edentulous patients(7–9). Modern implantology marks a great treatment innovation since edentulism is a frequent situation, especially in elderly people. Different types of implant-supported prostheses are available, depending on the number and position of implants, prosthetic design and material and type of retainer(10,11).

Sheth et al and Tenneti et al state that there is a lack of knowledge regarding implant placement among general practitioners. This can be due to deficits in the curriculum of dental schools or lack of interest among practitioners regarding implants(12,13). Our team has extensive knowledge and research experience that has translate into high quality publications (14–23))

The purpose of this study is to assess the knowledge and confidence among dental practitioners regarding implant placement.

2. Materials and Methods

An online questionnaire was formated to get information from practitioners across the country. Ethical approval was obtained from SRB committee, Saveetha dental college.

Questionnaire was formatted in google forms and circulated. 32 questions were included. The questionnaire was validated by 6 postgraduate students, department of Prosthodontics, saveetha dental college. The data collection for this survey was conducted over a 3 month period,i.e, between April 2020 till June 2020. Voluntary response was obtained from the practitioners. 208 responses were received and assessed.

Data was tabulated in excel. Statistical analysis was done in SPSS ver.20. Descriptive statistics were analysed. Chi-square test was done to evaluate association between number of years of practice and educational qualification of the participants and their responses. All outcome variables are represented in the form of graphs and pie charts.

3. Results and Discussion

In the present study 208 responses were received out of which, 69.6% were male and 30.4% were female. 80.7% were between 25-30 years of age, 0.4% were between 30-35 years of age, 0.4% were between 35-40 years of age, and 18.2% were greater than 45 years of age. 30.7% had less than 5 years of experience, 50.9% had 5-10 years of experience and 18.2% had greater than 15 years of experience. 42.3% were BDS qualified, 40.3% were MDS qualified and 17.3% were BDS+additional qualifications.

Table I - Represents the frequency of entries obtained from the survey

S No	Question	Options	Frequency(%)
1	Sex	Male Female	167 (69.6%) 41 (30.4%)
2	Age	25-30 years 30-35 years 35-40 years >45 years	168 (80.7%) 1 (0.4%) 1 (0.4%) 38 (18.2%)
3	No. of years of practice	<5 years 5-10 years 10-15 years >15 years	64 (30.7%) 106 (50.9%) 0 (0%) 38 (18.2%)

4	Educational qualification	BDS MDS BDS+Additional qualification MDS+Additional qualification	88 (42.3%) 84 (40.3%) 36 (17.3%) 0 (0%)
5	Do you routinely place implants?	Yes No	148 (71.1%) 60 (28.8%)
6	Were you trained in implant placement as a part of your dental curriculum?	Yes No	55 (26.4%) 128 (61.5%)
7	If not, where did you learn implant placement? (Out of the 61.5% of the above question)	Workshop Lectures Fellowship Self-learning	60 (46.8%) 16 (12.5%) 10 (7.8%) 42 (32.8%)
8	Which implant system do you use?	Nobel Straumann Equinox Osstem Genesis Adin Neobiotech Multiple of the above	29 (13.9%) 13 (6.2%) 1 (0.4%) 0 (0%) 10 (4.8%) 1 (4.8%) 28 (13.4%) 126 (60.5%)
9	Which implant protocol do you follow?	Free hand Pilot guide Surgical stent	67 (32.2%) 92 (44.2%) 49 (23.5%)
10	Who plans your implant cases?	Myself Specialist Radiologist Lab	79 (37.9%) 128 (61.5%) 0 (0%) 1 (0.4%)
11	Which visual aid do you prefer for your implant cases?	IOPA OPG CT CBCT Multiple of the above	1 (0.4%) 1 (0.4%) 0 (0%) 110 (52.8%) 96 (46.1%)
12	Do you use software planning for your cases?	Yes No	104 (50%) 104 (50%)
13	If yes, which software do you use? (Out of 50% of above question)	NobelGuide SIMPlant Other	89 (42.7%) 1 (0.4%) 24 (11.5%)
14	How confident would you feel placing an implant without any additional aid?	1 2 3 4 5 6 7 8 9 10	37 (17.7%) 1 (0.4%) 2 (0.9%) 24 (11.5%) 66 (31.7%) 10 (4.8%) 42 (20.1%) 25 (12%) 1 (0.4%) 0 (0%)

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15	How confident would you feel planning your own implant cases?	1 2 3 4 5 6 7 8 9 10	37 (17.7%) 0 (0%) 1 (0.4%) 0 (0%) 51 (24.5%) 1 (0.4%) 53 (25.4%) 54 (25.9%) 11 (5.2%) 0 (0%)
16	How confident are you in placing implants manually?	1 2 3 4 5 6 7 8 9 10	37 (17.7%) 1 (0.4%) 1 (0.4%) 13 (6.2%) 77 (37%) 0 (0%) 41 (19.7%) 36 (17.3%) 2 (0.9%) 0 (0%)
17	How confident are you in planning full mouth cases by yourself?	1 2 3 4 5 6 7 8 9 10	39 (18.7%) 0 (0%) 53 (25.4%) 26 (12.5%) 50 (24%) 0 (0%) 27 (12.9%) 10 (4.8%) 3 (1.4%) 0 (0%)
18	How would you check for prosthesis passivity?	IOPA One screw Observe fit as in cast Tighten the prosthetic screw	30 (14.4%) 31 (14.9%) 85 (40.8%) 62 (29.8%)
19	How much clearance is necessary for vital structures?	0.5mm 0.75mm 1mm None of the above	0 (0%) 37 (17.7%) 85 (40.8%) 86 (41.3%)
20	How far should you place an implant anterior to mental foramen?	0.5mm 0.75mm 1mm None of the above	10 (4.8%) 2 (0.9%) 82 (39.4%) 114 (54.8%)
21	Lower anterior which is the safest area for implant placement even when the alveolar portion is completely lost	True False	126 (60.6%) 82 (39.4%)
22	Which component of the implant contributes best to implant success?	Width Height Surface Platform	43 (20.6%) 93 (44.7%) 56 (26.9%) 16 (7.6%)
23	How do you choose your implant system?	Representative opinion Self-assessment Online advertisement/ website	25 (12%) 16 (7.6%)

		content Peer opinion	1 (0.4%) 166 (79.8%)
24	How do you choose your protocol or plan?	Peer opinion Online videos Published literature Expert opinion	20 (9.6%) 0 (0%) 24 (11.5%) 164 (78.8%)
25	How confident are you in conducting implant workshops or tutorials?	1 2 3 4 5 6 7 8 9 10	84 (40.2%) 0 (0%) 41 (19.7%) 0 (0%) 38 (18.2%) 0 (0%) 1 (0.4%) 43 (20.6%) 1 (0.4%) 0 (0%)
26	Have you used grafts in your implant cases?	Yes No	132 (63.4%) 76 (36.5%)
27	Which graft do you routinely use?	Autograft Allograft Xenograft	77 (37%) 52 (25%) 79 (37.9%)
28	Which Zeno graft do you use regularly?	Bio-oss Cre-oss B-ostin Ostofom Other	169 (81.2%) 0 (0%) 14 (6.7%) 1 (0.4%) 24 (11.5%)
29	Think membrane is necessary for graft graft placement	Yes No	148 (71.1%) 60 (28.8%)
30	How do you prevent crestal bone loss?	Submerge implants Platform matching Platforms switching Polished collar	53 (25.4%) 32 (15.3%) 42 (20.1%) 81 (38.9%)

Table II - Represents the awareness and knowledge regarding implant placement among practitioners of various age groups, years of practice and practitioner qualification. Significance value was set at $P<0.05$

S.No			No. of years of practice	Practitioner qualification
1	Routine placement of implants	Chi-square df P value	20.270 2 .001	57.507 2 .001
2	Planning of implant cases	Chi-square df P value	79.048 4 .001	49.270 4 .001
3	Usage of software for planning cases	Chi-square df P value	4.194 2 .123	18.081 2 .001
4	Confidence for placeing implants without any	Chi-square df	277.735 16	292.525 16

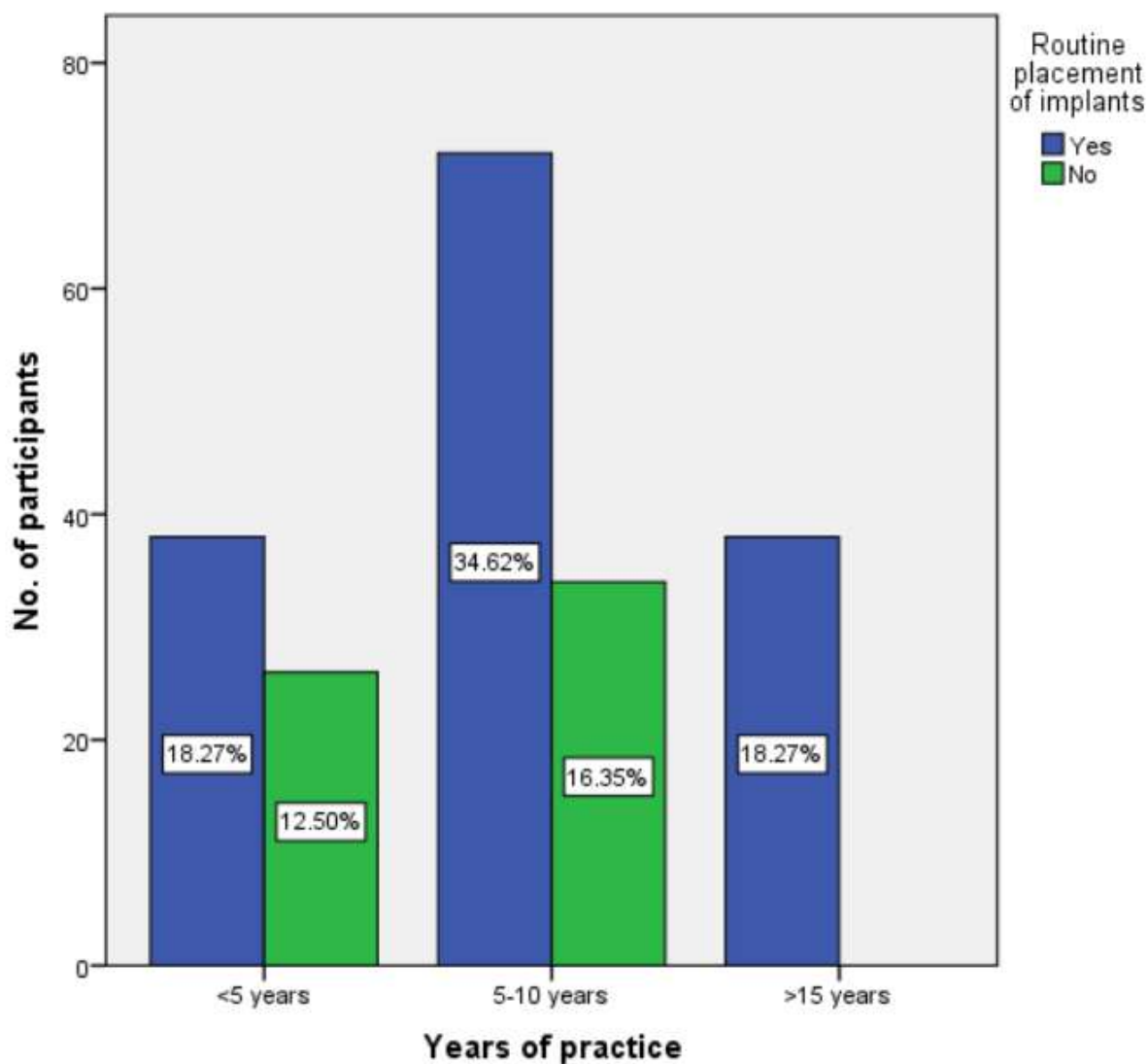|	additional aid	P value	.001	.001
5	Confidence in planning implant cases	Chi-square df P value	185.530 12 .001	153.331 12 .001
6	Confidence in planning full mouth cases	Chi-square df P value	243.227 12 .001	273.978 12 .001
7	Confidence to conduct implant workshops	Chi-square df P value	12.542 10 .250	8.689 10 .562

Figure I - Bar graph representing the years of practice of the dental practitioners and their routine placement of implants. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded whether they place implants routinely (Yes) or not (No). Majority of the participants routinely place implants in their practice. It is also statistically significant. (Pearson's chi square value = 20.270, df = 2, P value = 0.001(<0.05)).
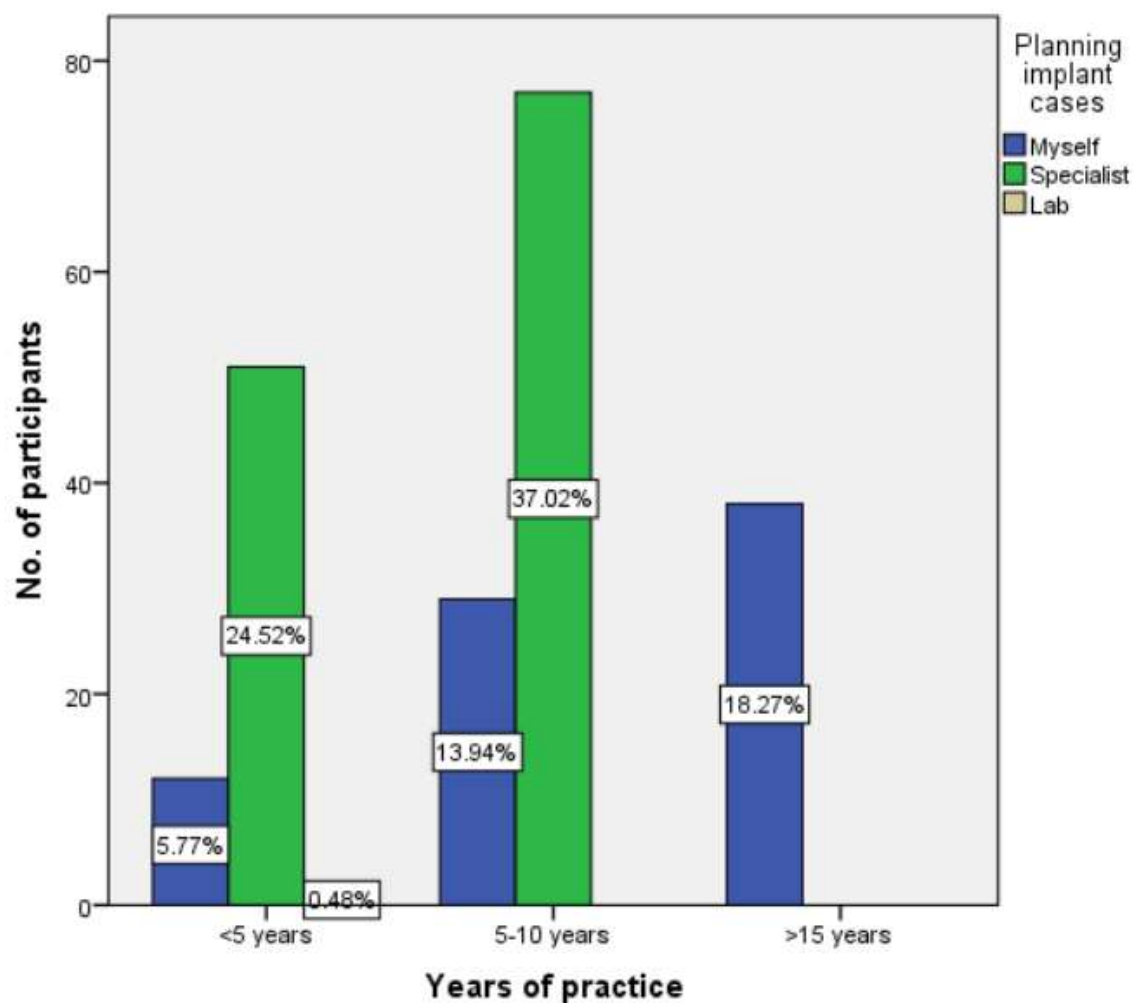
Figure II - Bar graph representing the years of practice of the dental practitioners and who plans their implant cases. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded whether they plan their own cases or a specialist or lab does. Majority of the participants revealed that a specialist plans their cases. It is also statistically significant. (Pearson's chi square value = 79.048, df = 4, P value = 0.001(<0.05)).
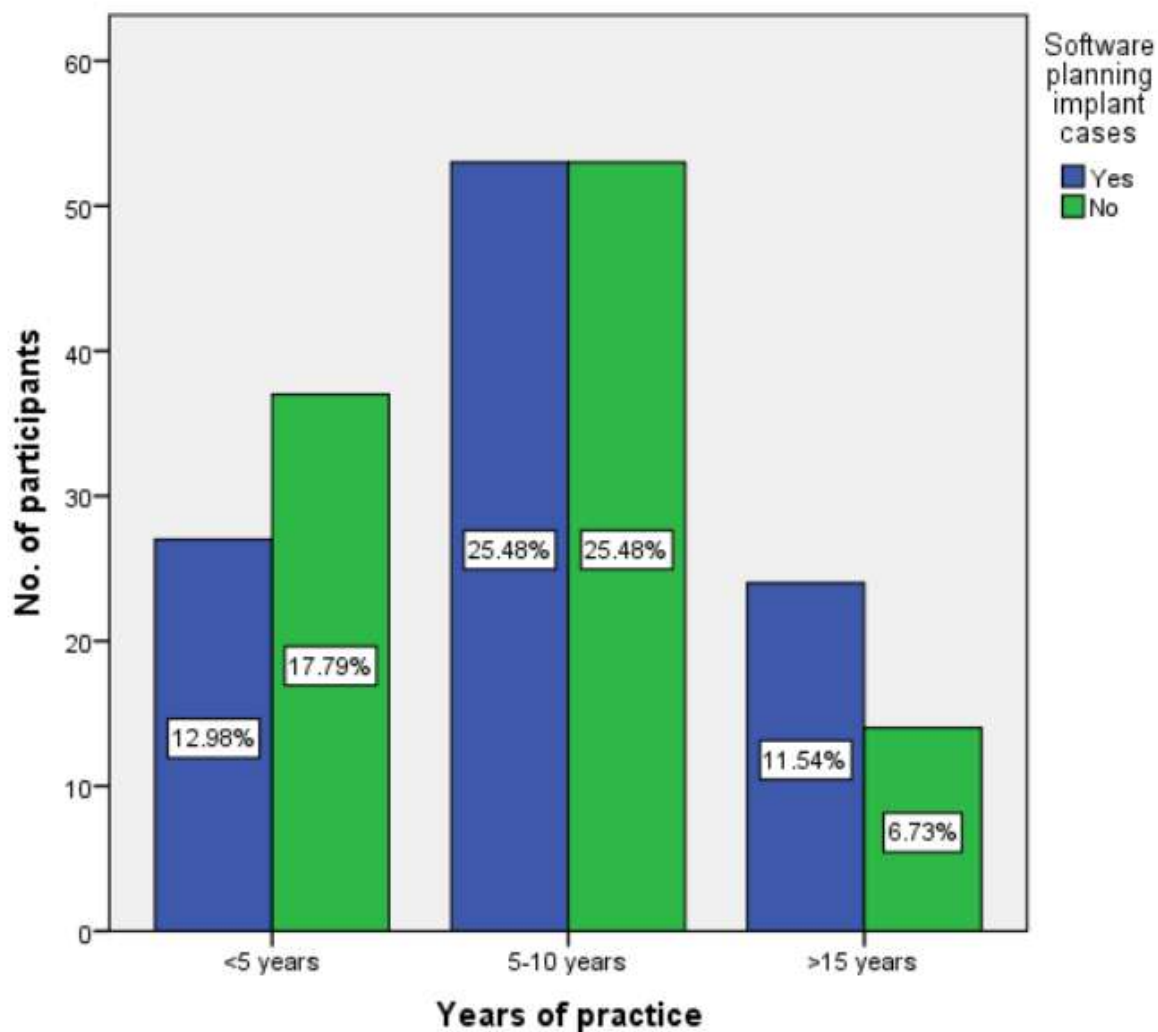
Figure III - Bar graph representing the years of practice of the dental practitioners and weather they use softwares to plan their implant cases. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded whether they use software to plan your implant cases (Yes) or not (No). Participants with less than 5 years of practice mostly did not use any softwares and it was vice versa for those with greater than 15 years of practice. It is not statistically significant. (Pearson's chi square value = 4.194, df = 2, P value = 0.123(>0.05)).

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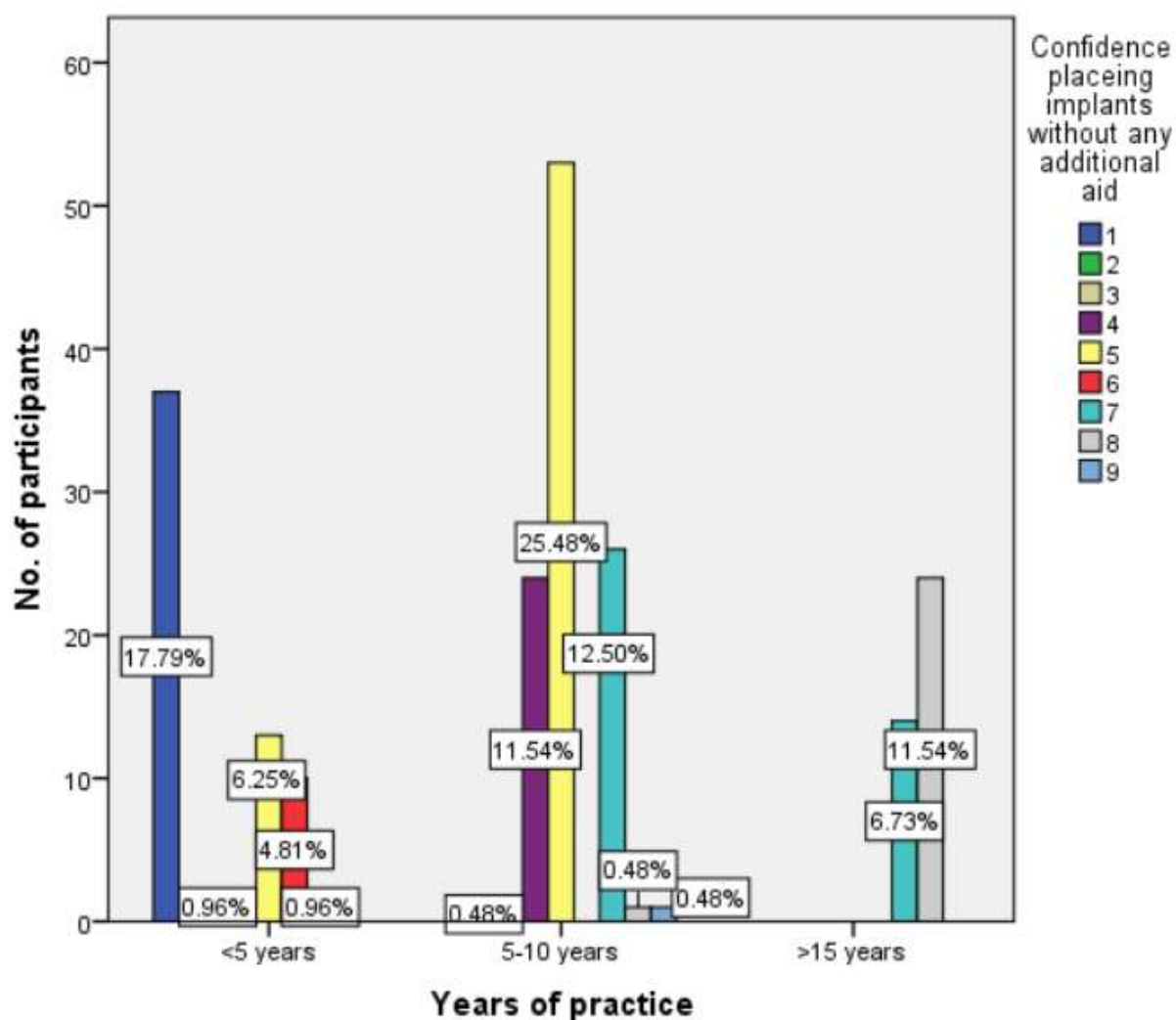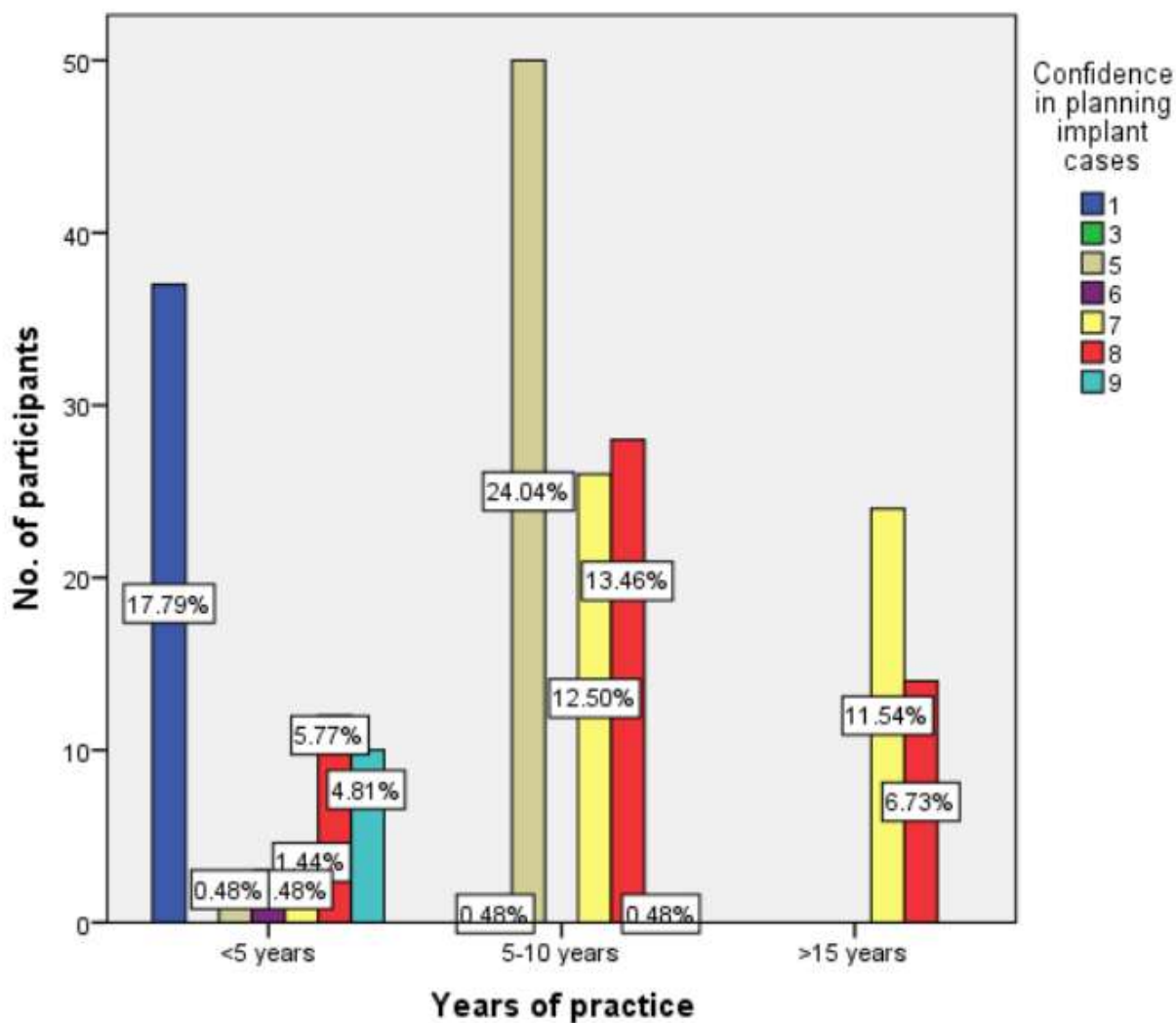
Figure IV - Bar graph representing the years of practice of the dental practitioners and their confidence in placing implants without any additional aid. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded how confident they were on placing implants without any additional aid on a scale of 1-10. Practitioners with more than 15 years of practice appeared to be more confident. It is also statistically significant. (Pearson's chi square value = 227.735, df = 16, P value = 0.001(<0.05)).
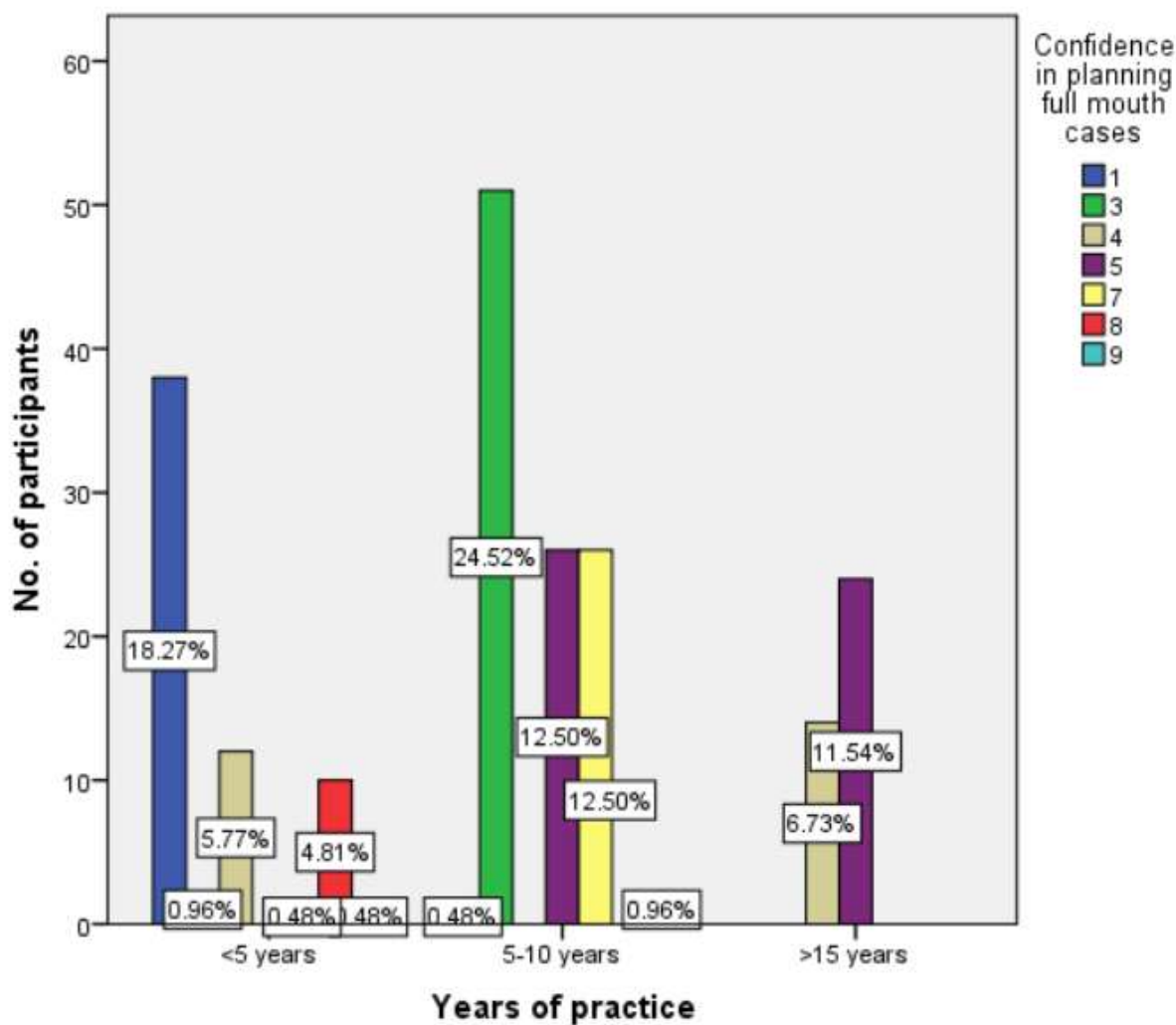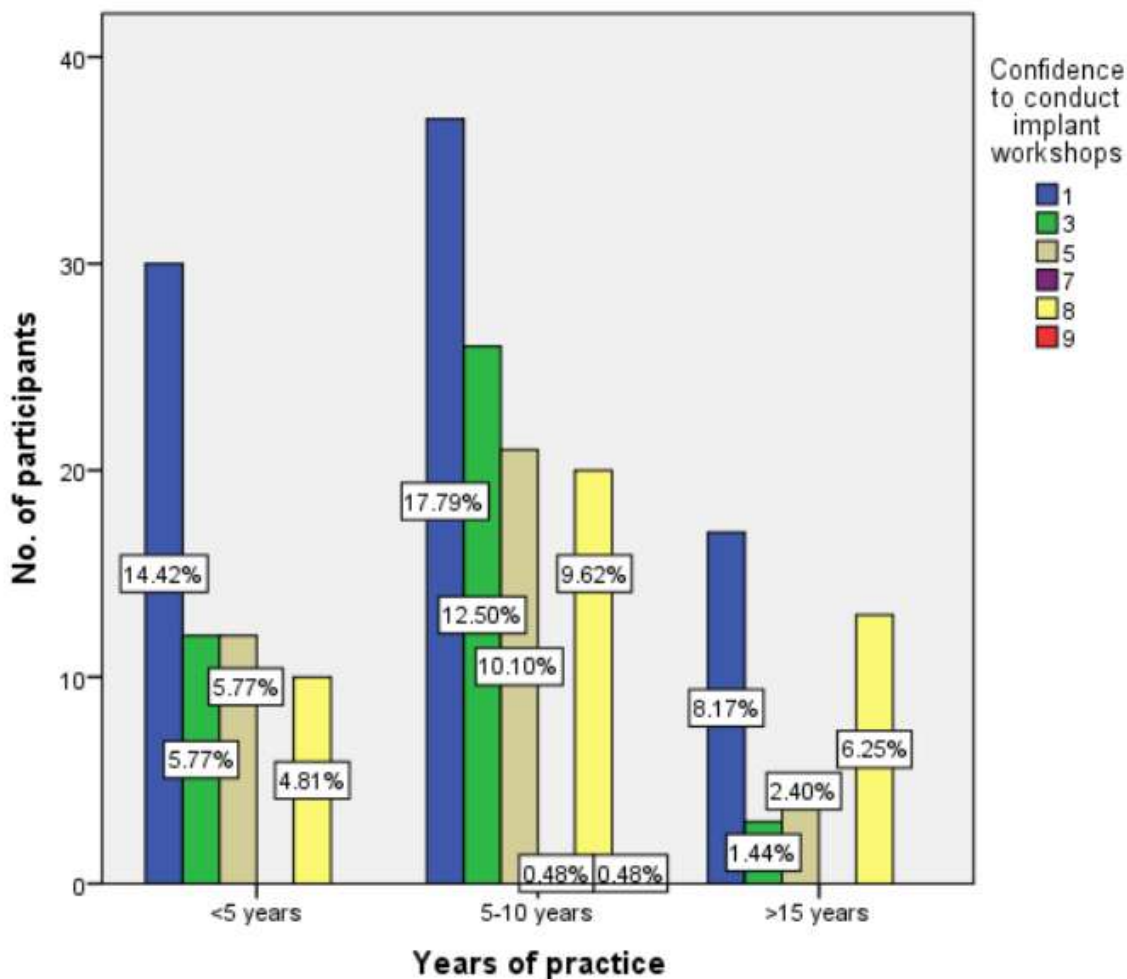
Figure V - Bar graph representing the years of practice of the dental practitioners and their confidence in planning implant cases. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded how confident they were on planning implant cases on a scale of 1-10. Practitioners with more than 15 years of practice appeared to be more confident. It is also statistically significant. (Pearson's chi square value = 185.530, df = 12, P value = 0.001(<0.05)).

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Figure VI - Bar graph representing the years of practice of the dental practitioners and their confidence in planning full mouth cases. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded how confident they were on planning full mouth cases on a scale of 1-10. Majority of the participants were not very confident. It is also statistically significant. (Pearson's chi square value = 243.227, df = 12, P value = 0.001(<0.05)).
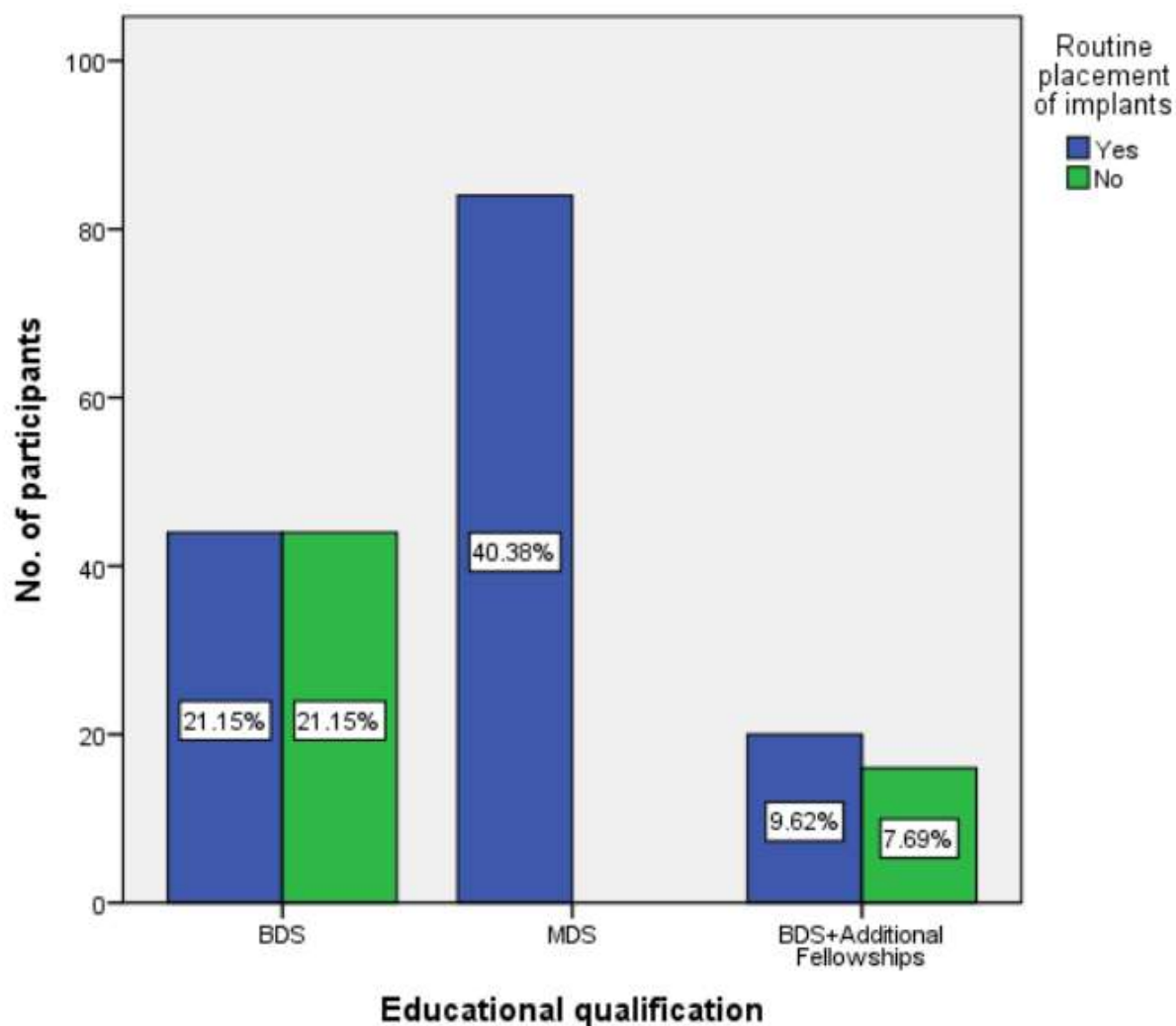
Figure VII - Bar graph representing the years of practice of the dental practitioners and their confidence in conducting implant workshops. X-axis represents years of practice of the dental practitioners and Y-axis represents the number of participants who responded how confident they were in conducting implant workshops on a scale of 1-10. Majority of the participants were not confident. It is not statistically significant. (Pearson's chi square value = 12.542, df = 10, P value = 0.250(>0.05)).
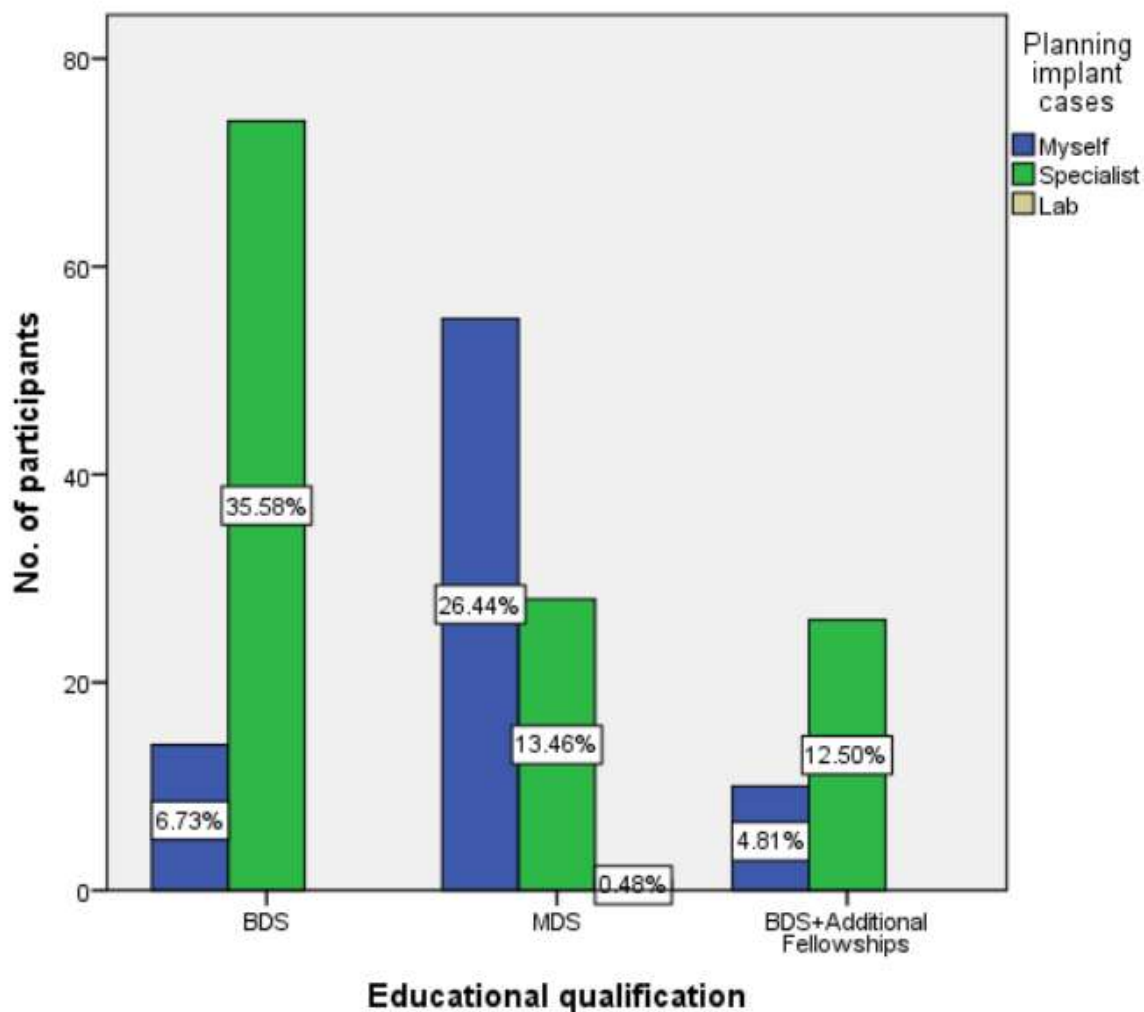
Figure VIII - Bar graph representing the educational qualification of the dental practitioners and their routine placement of implants. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded whether they place implants routinely (Yes) or not (No). Majority of the participants routinely place implants in their practice. It is also statistically significant. (Pearson's chi square value = 57.507, df = 2, P value = 0.001(<0.05)).

Figure IX - Bar graph representing the educational qualification of the dental practitioners and who plans their implant cases. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded whether they plan their own cases or a specialist or lab does. Majority of the participants revealed that a specialist plans their cases. However, in MDS practitioners the majority of the cases are planned by themselves. It is also statistically significant. (Pearson's chi square value = 49.270, df = 4, P value = 0.001(<0.05)).
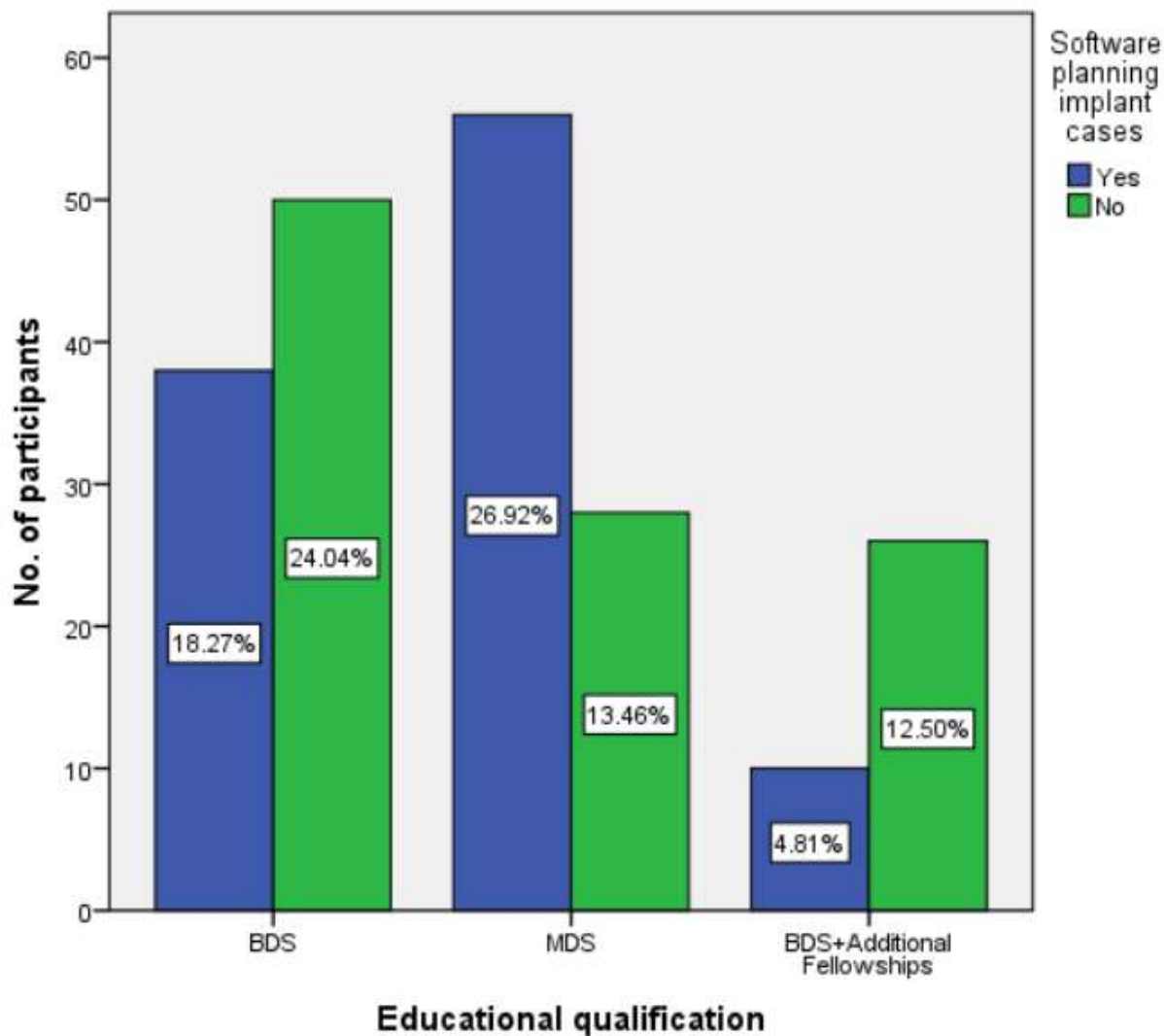
Figure X - Bar graph representing the educational qualification of the dental practitioners and whether they use softwares to plan their implant cases. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded whether they use software to plan your implant cases (Yes) or not (No). Majority of the practitioners use softwares for planning cases. However, those participants with BDS+additional fellowships did not majorly use them. It is also statistically significant. (Pearson's chi square value = 18.801, df = 2, P value = 0.001(<0.05)).
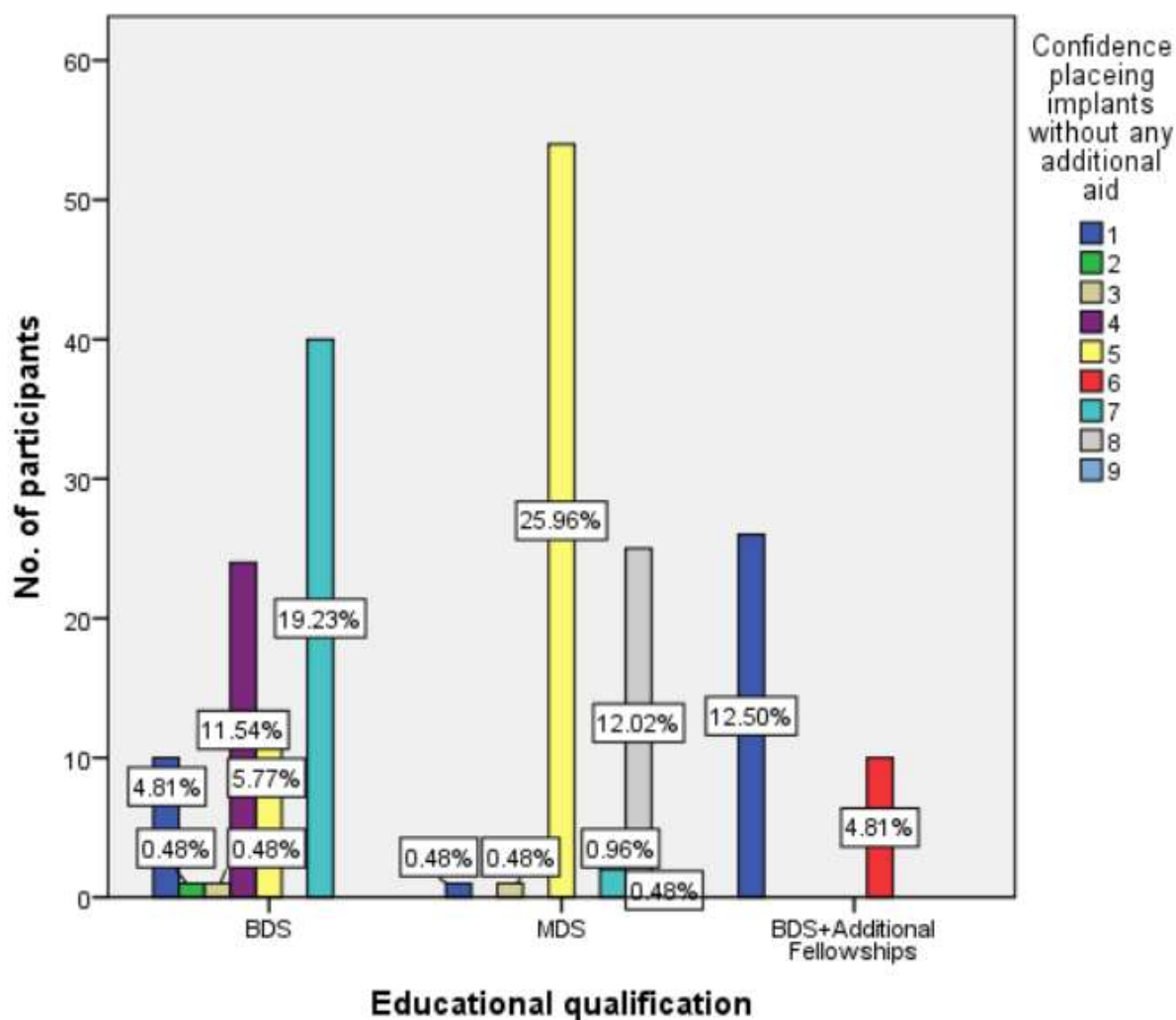
Figure XI - Bar graph representing the educational qualification of the dental practitioners and their confidence in placing implants without any additional aid. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded how confident they were on placing implants without any additional aid on a scale of 1-10. MDS practitioners appeared to be more confident. It is also statistically significant. (Pearson's chi square value = 292.525, df = 16, P value = 0.001(<0.05)).

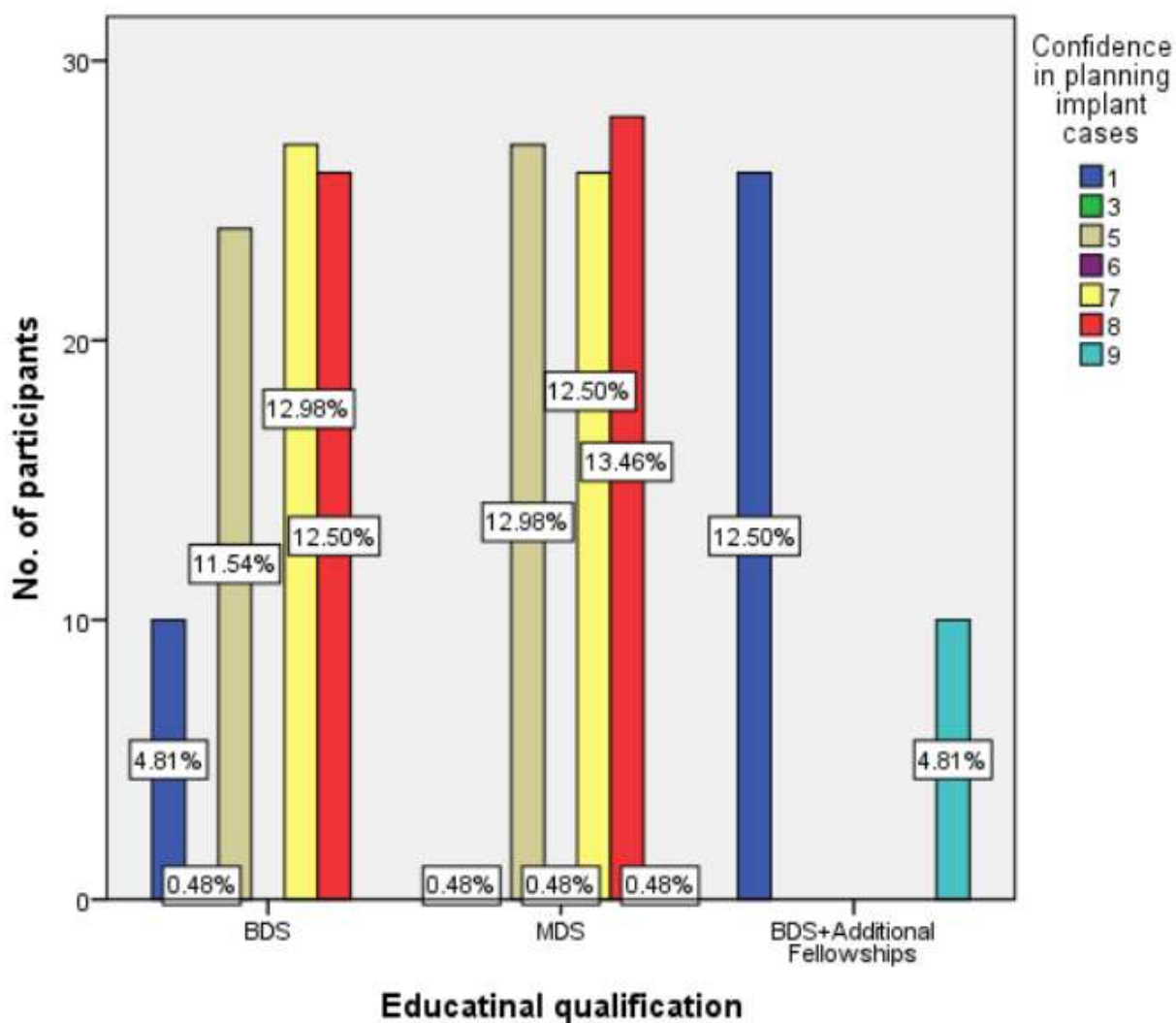Eur. Chem. Bull. 2023, 12 (S2), 1192 – 1213

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Figure XII - Bar graph representing the educational qualification of the dental practitioners and their confidence in planning implant cases. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded how confident they were on planning implant cases on a scale of 1-10. Majority of the practitioners appeared to be more confident. It is also statistically significant. (Pearson's chi square value = 153.331, df = 12, P value = 0.001(<0.05)).
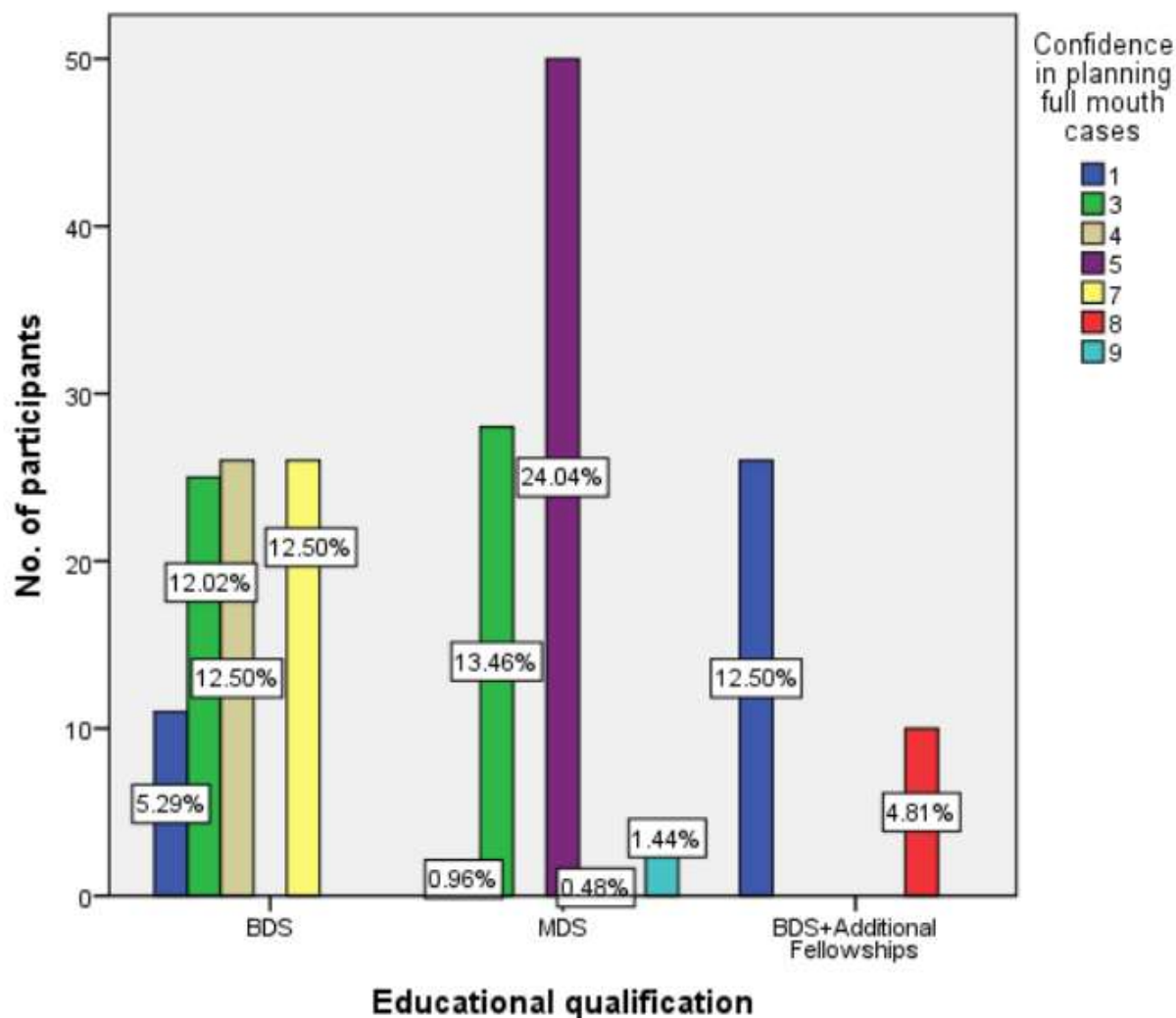
Figure XIII - Bar graph representing the educational qualification of the dental practitioners and their confidence in planning full mouth cases. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded how confident they were on planning full mouth cases on a scale of 1-10. MDS practitioners appeared to be more confident. It is also statistically significant. (Pearson's chi square value = 273.978, df = 12, P value = 0.001(<0.05)).
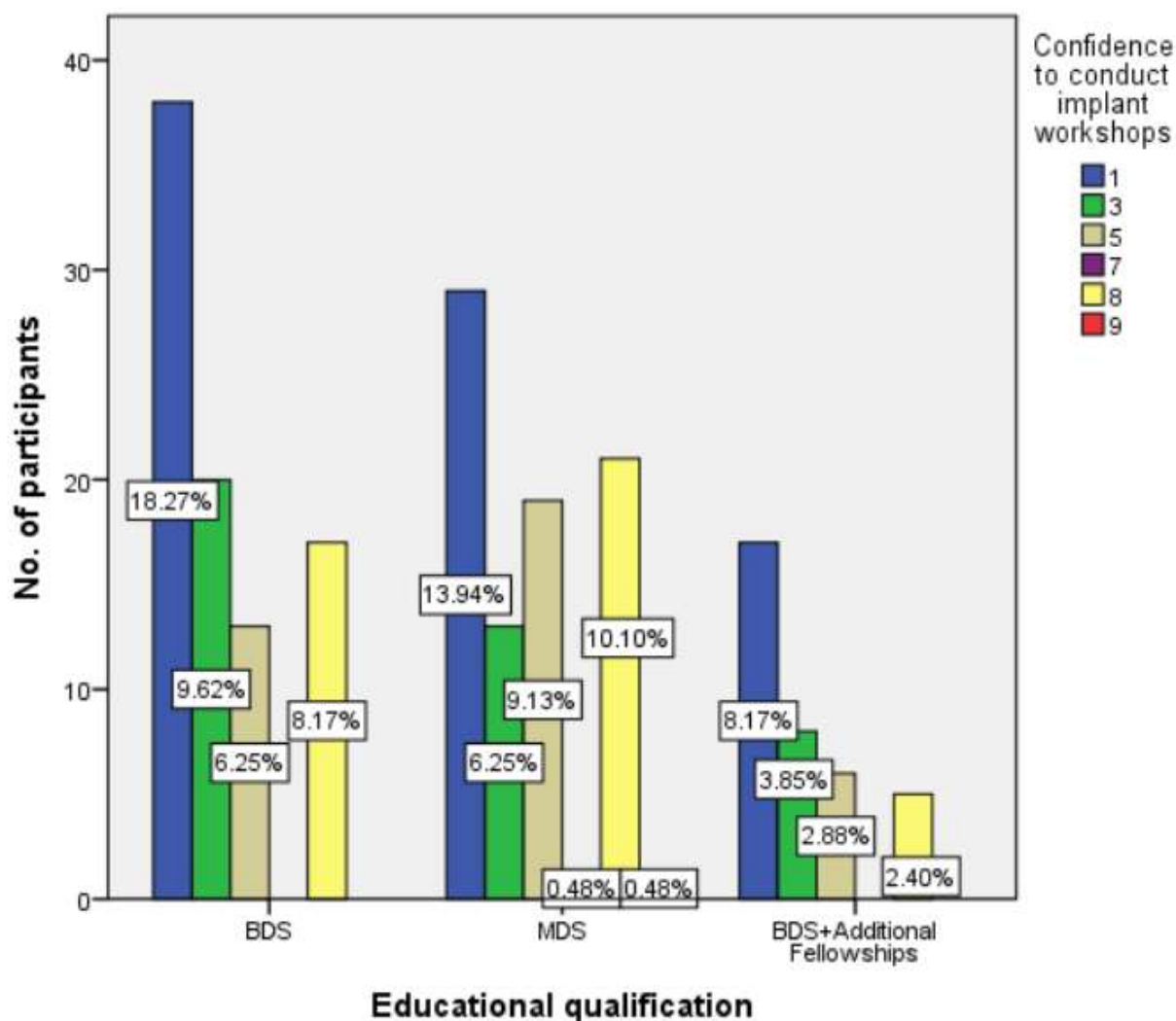
Figure XIV - Bar graph representing the educational qualification of the dental practitioners and their confidence in conducting implant workshops. X-axis represents educational qualification of the dental practitioners and Y-axis represents the number of participants who responded how confident they were in conducting implant workshops on a scale of 1-10. Majority of the participants were not confident. It is not statistically significant. (Pearson's chi square value = 8.689, df = 10, P value = 0.562(>0.05)).

4.   Discussion

Treatment with implants has become an important part of prosthetic rehabilitation over the last decade. This treatment option is being practiced in both urban and rural areas. This specialty practice requires both knowledge and clinical experience for optimal results. Implant placement is widely practiced in both completely and partially edentulous patients. They provide longevity as well as a fixed approach to treatment planning. It also saves the practitioner from the complications of relining dentures(24).

On a more academic level, a structured program is majorly not available at an undergraduate level. Practitioners either learn this skill at a postgraduate level or any fellowships or workshops that are conducted. The knowledge, awareness and confidence level of practitioners to anticipate and handle any type of outcome is of utmost importance(24,25).

In the present study, significant association was found between the years of practitioner experience and his knowledge and awareness regarding implants. Significant association was also found with years of experience and routine placement of implants. This was in accordance with a study done by Nagpal et al and Eckert et al, where it was found that practitioners <5 years of experience had the best knowledge, more positive attitude and more practice for implants(26,27).

There is significant association between the practitioner qualification and his knowledge and awareness regarding implants in the present study.

Similar results have been obtained by Lang-Hua et al and Maalhagh-Fard which showed a strong positive association in implant placement and graduates who have completed at least an elective course in implant dentistry(28,29).

According to a survey done by Chi-Hong et al, there is a high demand among practitioners for continuing professional development in implant dentistry. This requires efforts to be made to increase the knowledge and awareness about implants among general practitioners, to improve the quality of life of patients(30).

The limitations of the study are the small sample size and that the institutions were the practitioners graduated from were not assessed. The geographical location of the participants practice was also not taken under consideration

5.　Conclusion

Within the limitations of the study, there is significant association between experience of practitioners with knowledge and awareness regarding implants among practitioners. There was also significant association between practitioner qualification and his knowledge and awareness regarding implants. It can be concluded that although implant dentistry is a very promising branch, there are areas that need to be worked on so that more practitioners can offer a variety of treatment options for the patients, to improve their quality of life.

Acknowledgement

Conflict of Interest
There are no conflicts of interest.

6.　References

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