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Title

Maintaining Dental Implants – Do General Dental Practitioners have the necessary knowledge?

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Abstract

Objective

The aim of this study was to understand the opinion of general dental practitioners about the current level of implant education at both undergraduate and postgraduate levels.

Materials and Methods

A questionnaire was sent to the general dental practitioners working in a group of practices in the West Midlands, UK. The completed responses were analysed.

Results

Ninety one out of 101 dentists responded to the questionnaires (95.6%). Sixty seven (77%) dentists stated that they learnt only theoretical aspects of dental implants during their undergraduate training. [The general interest in learning and the barriers have been identified. Majority of them stated that the training they received was not adequate. In addition, few barriers in dental implant provision by general dentists were also identified in the survey.](#) The main barriers were risk of failures (56.3%), to avoid complications (65.5%) and the cost of learning (51.7%). The results were correlated to the implant competences set by the regulatory organisations such as General Dental Council and Association of Dental Education Europe.

Conclusion

The present study confirmed that the current implant education at both undergraduate and postgraduate levels in the UK does not instil confidence to the GDPs to provide and maintain dental implants.

INTRODUCTION

In 2011, the Adult dental health survey 2009, reported a 6 percent decrease in the average number of edentate adults in England compared to the previous surveys.¹⁻³ Similar statistics of increased tooth retention have been reported in other Western countries.⁴⁻⁵ In addition, patient expectations have also increased with respect to aesthetics and function. Therefore, advanced treatment planning including implants have become inevitable in modern dentistry.⁶ Such treatment planning challenges the general dental practitioner who has not necessarily received specialist training to deal with implant restored mouths. The need to maintain or intervene in the maintenance of implants is increasing even if the practitioner does not place or restore implants themselves. Hence, implant education is required at both undergraduate and postgraduate levels that is tailored to the range of cases that a non-specialist is likely to encounter.

General Dental Council's document *Preparing for Practice – Dental team learning outcomes for registration* expects the registered dentist to recognise and explain to patients the range of implant treatment options, their impact outcomes, limitations and risks. It also mandates the dentist to describe the risks related to dental implant therapy and manage the health of peri-implant tissues.⁷ However, the GDC limits the UK qualified dentist from practicing implant dentistry without undertaking structured postgraduate training and assessment of competence, which relates to the *Training Standards in Implant Dentistry* published by the *Faculty of General Dental Practitioners, UK*.^{8,9}

The Association of Dental Education in Europe (ADEE) is an independent European organisation, which contributes to implant education by organizing periodic the European Consensus workshops. The outcomes of the workshop in 2008 were the *Profile and competences statement* for the European Dentist and the *competencies and learning outcome in implant education* documents. The first document recommends a competent dentist to be familiar with the diagnosis for potential implant patients, communicating to patients about the risks, benefits and long term consequences of using implants within an overall treatment concept, and the principles and techniques involved.¹⁰ The second set of documents set out the competences and learning outcomes for teaching in implant dentistry in undergraduate, postgraduate and CPD courses.^{11,12}

The 2nd consensus workshop report confirmed the integration of implant dentistry in undergraduate education in European Institutions.¹³ However, the education delivery is variable in terms of the amount of information provided, the level of training and whether the course is purely theory or contains any hands on clinical component.¹⁴ The report also identified the challenges in developing strategies and in implementing the existing competence profiles. It also considered the challenge of how much should be delivered at undergraduate level. Whilst at the post graduate level, there are many implant training courses available, there is once again a great dissimilarity-variation in the quality of training and duration of these courses as they may range from one day workshops to degree level qualifications.^{15 16}

Surveys on dental implant education are limited and those published have focussed on specific areas. For example two surveys recorded the responses from dentists attended the continuing dental education in dental implants.^{17 18} In these surveys, the respondents were mainly established private practitioners. They considered that attending those courses made them aware of their own limitations and the majority of them thought there should be a speciality in dental implantology.

The present literature and guidelines indicate that more information is required on how general dentists encounter implants in their everyday practice to assess whether they are meeting the learning outcomes or competencies highlighted in the previous documents.

AIMS

The aim of this study is to evaluate the current level of implant experience; barriers in implant provision and opinion of general dental practitioners working predominantly within the National Health Service in the UK.

MATERIALS AND METHODS

A structured paper based questionnaire was developed to collect information about the participant's background, implant education and experience including their opinion about current implant education. The questionnaire included closed and open ended questions to facilitate quicker response and to allow comments and reflections at strategic points respectively. The survey was refined after a pilot response to the questionnaire from five

dentists. [The study was conducted complying with the University of Birmingham Ethics committee guidelines.](#)

The questionnaire was distributed to general dental practitioners working within a representative group of practices in the West Midlands, UK. [The chosen group of practices have spread all over the west midlands with a mixture of dentists from different Institutional backgrounds. The dentists participated in the study were, 26 local graduates, 11 from the London area, and at least 2 were representing each University in the UK. This formed the majority of the study group. The remaining were from European countries such as Portugal, Germany, and non EU countries such as India and Pakistan. The](#) response to the questionnaire was maximised by delivering to the practitioners in a range of formats including email, regular post, internal post [arranged by the head office arrangement within the group of practices](#) and a few were hand delivered where necessary. The dentists were encouraged to provide responses using different modes such as regular post, email attachments, “whatsapp” and multimedia messages. [This was to facilitate the response rate. The digital data transmission especially through whatsapp has been reported and recommended in the medical field.](#)¹⁹

RESULTS

The questionnaire was initially emailed to 101 clinicians. Nine of the respondents were found to be hygienists or therapists and were excluded for the purposes of this study. One dentist had left the practice group at the time when the questionnaire was sent. This reduced the number of dentists to 91. Out of this, 87 dentists responded to the questionnaire. This gave a response rate of 95.6%.

The age categorisation and year of graduation are shown in tables 1 and 2 respectively. Majority of the respondents were aged under 40 (79.3%), and over half of them were graduated after 1990 (66.7 %).

Seventy six (87.4 %) of the total respondents were predominantly NHS practitioners (Table 3), and nearly 90% of them did not provide implant treatment (Table 4). Nine percent of the dentists limited themselves to simple implant treatments such as single implants or small bridges.

Sixty seven (77%) stated that they learnt about the theoretical concepts of fixed implants and implant supported overdentures during their undergraduate training (Table 5). However, they stated that there was no practical or clinical component provided.

Further training

The group consisted of general dentists of varied experience. These also included 2 dentists enrolled on a University based MSc in Implant dentistry, 3 orthodontists, 2 dentists holding qualifications in periodontics and 2 in prosthodontics. In addition two dentists had completed a one year certificate in implant dentistry.

Forty two (48.3%) dentists did not have any post graduate training [in dental implants](#) (Table 6). The remaining 52.7% underwent postgraduate [dental implant](#) training through CPD courses including section 63 courses and Vocational Training study days; Commercial courses within the UK or overseas courses. An example of the overseas country providing implant courses was Egypt. These trainings ranged from a one day workshop to a 10 day course. The certificate courses extended up to 12 months, some including treatment of candidates' own patients in the training clinic at a subsidised cost. The treatment cost was in turn added to the dentist's course fee.

Recall & Maintenance protocol

Those dentists who provided implants reported on a range of recall intervals including monthly, three monthly, six monthly and annually. However, there was no strict protocol mentioned for the care of implant restorations. The dentists who provide implants reported that they regularly maintain their patients. Two dentists who do not provide implants suggested the recall and maintenance should be undertaken by hygienists. Only two of the respondents considered that it was the responsibility of the referring dentist to maintain implant restored mouths, if the patient had originally been sent to a specialist for implant provision.

Barriers in provision of implants

The main barriers reported to their own personal clinical placement of implants were risk of failures (56.3%), to avoid complications (65.5%) and the cost of learning (51.7%). The next level was the cost of treatment (36.8%). The maintenance aspect was not considered a major issue (15%) (Table 7).

The other barriers mentioned by the respondents were; the indemnity to cover dental implant treatment which is higher than their regular fee, with chances of increase in cost and conditions if a situation of compensation arises ²⁰; interest in the other fields of dentistry, and family commitments.

Opinion about current undergraduate implant training:

The general opinion was that the level of current undergraduate dental implant training is poor or inadequate. It was stated that further training is expensive and not available to everyone. Therefore the dentists who completed the questionnaire suggested that, implant training should be part of the undergraduate curriculum and that it should be substantial to include a practical/ hands on aspect. At least one dentist has recommended shortening the teaching of other aspects to include implants in the curriculum. Two of the senior dentists recommended that dentists should only perform such treatment by following recognised specialist training

DISCUSSION

The study group involved dentists working in a large independent group of practices in the West Midlands. [This is not a corporate chain and do not operate in the same way as a corporate. They have standard policies for the group, such as infection control, radiation protection etc. However, the policies related to specific treatments such as implants are tailored to the individual practice depending on how the dentists wish to work. Therefore, the results of the study are the opinion of the dentists, which is not influenced by the employment situation.](#)

The majority of the dentists were associates, aged less than 40 years and graduated after 1990 providing predominantly NHS dentistry. The number of dentists involved in the survey may appear small. However, it does provide us with an insight into the opinions of younger general dental practitioners whose postgraduate training will influence the future of dentistry provision in the UK.

Only a few dentists in the group provided implant treatment. In contrast to the results of a previous survey conducted in 2006 ¹⁸, the majority of the GDPs did learn implantology as an undergraduate. However, the education received was mainly theoretical teaching and learning which reveals the relative shortcomings in implant education. Many have had some form of

postgraduate training through section 63, CPD courses which has raised their interest in learning about the use of dental implants.

With respect to implant dentistry in the UK, the General Dental Council recommends the dentist to communicate the risks - benefits of implants to the patients and to *manage* the health of peri-implant tissues.⁷ The number of patients presenting with peri-implant disease is also increasing.^{21 22} This can be a major factor in NHS that will take up the specialist time and funding. This will in turn limit the number of new implant placements.²³ Therefore, the responsibility for the subsequent care and maintenance of the implant patient should be clearly defined and shared between the operator who places the implant and the clinician who maintains the overall dental health of the patient. However, in the current study, the majority considered that maintenance was the responsibility of the specialist dentist who provided the implant restoration.

In addition, there is no published guidance on how dental implant recalls should be structured. This is an area which needs further exploration.

As per the GDC and ADEE recommendations, the majority of the dentists are aware of their responsibility in educating patients and providing options of implants to patients. The opinion of the dentists participated in the survey has confirmed that the current implant training is deficient. Therefore, However, with their current knowledge and training experienced provided it is doubtful that they will be able to address the implant need for the appropriate patient, referral at a suitable stage and provide ongoing maintenance.

The response about the current barriers indicates that their present implant education does not instil confidence in them. to start providing treatment in this area. However, a direct question regarding the confidence in providing dental implant treatment was avoided to eliminate the Dunning-Kruger effect. This is a cognitive bias wherein the unskilled people mistakenly assess their ability to be much higher than is accurate.²⁴ The dentists may assume that they are confident, but they may not be competent. The majority of the GDPs considered medical litigation as a major barrier in providing implants. next to the cost of learning. This may also be related to their reluctance to be involved with the maintenance of the implants. The next major barrier was the cost of learning. Dental implant training is expensive as it involves high consumables and surgical costs. This may be a factor to consider, especially in the UK undergraduate programmes as they are state funded. This may not affect the other countries as the system is not common across the whole EU.

Investigation of implant education in Europe, five years after the first implant competency document was published showed that the volume of teaching implants is expanding, in line with the demand and regulations.²⁵ The response to the present questionnaire also reflected this view. The majority stated that implant treatment can be provided in general practice with appropriate training. This was in contrast to the 2006 survey¹⁸, where the majority of the respondents recommended a speciality pathway for dental implantology.

Current implant education and clinical training should be aligned to the competences and learning outcomes published by the GDC and ADEE. However the future provision of implant education at the undergraduate level requires much thought. The main problem addressed at the first ADEE consensus was to find a space in the already crowded curriculum. However, several European Institutions have managed to overcome this issue which is partly related to other factors including different remuneration systems.²² In the UK, it may be the time to consider a holistic approach. This will make dental implant education a shared responsibility between Prosthodontic, Surgical and Periodontic disciplines. However, more research may be needed to identify the amount and nature of information and training to be provided to the undergraduate student.

CONCLUSION

General dental practitioners in the UK and Europe, are expected to attain specific competencies and fulfil learning outcomes in relation to dental implants. However, the results of the present study confirmed that the current implant education in the UK does not instil confidence to the GDPs to provide and maintain dental implants. Few barriers in implant provision have also been identified. Further research may be needed to explore the needs in relation to dental implant education.

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Table 1. The age characteristics of the sample of dentists

Age	Number of dentists	Response rate (%)
25-30	31	35.6%
30-40	38	43.7 %
40-50	15	17.2%
50+	3	3.4%

Table 2. Year of graduation

Year	Number of dentists	Response rate (%)
1970 -80	10	11.5%
1981-90	17	19.5%
1991-2000	32	36.8%
2001-2010	22	25.3%
2011+	4	4.6%
Not specified	2	2.3%

Table 3. Nature of Practice

Year	Number of dentists	Response rate (%)
Purely NHS	30	34.5 %
75- 99% NHS	34	39.1 %
50-75% NHS	12	13.8%
1-25%NHS	9	10.3%
Purely Private	2	2.3%

Table 4. Implant Experience

Cases	Number of	Response rate (%)
None	78	89.7 %

Simple anteriors & posteriors	7	8 %
complex	1	1.1%
others	1*	1.1%

* restored only one implant

Table 5. Implant experience during undergraduate training

Implant Training	Number of	Response rate (%)
Learnt	67	77%
Did not learn	20	23%

Table 6. Post graduate training

Implant Training		Number of dentists	Response rate (%)
Learnt	CPDs	31	36.6%
	Commercial	10	11.5%
	Certificates	4	4.6%
Did not learn		42	48.3%

Table 7. Barriers

Barriers	Number of dentists	Response rate (%)
Cost of Learning	45	51.7%
Cost of treatment	32	36.8%
Risk of Failures	49	56.3%
Avoid complications	57	65.5 %
Maintenance	13	15%

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