Original Article

Evaluation of knowledge, attitude, and practices of registered dental practitioners of Vadodara district, Gujarat regarding clinical photography: A cross-sectional survey

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ABSTRACT

Aim: The purpose of this study was to assess the knowledge, attitude, and practices of dental practitioners registered in Indian Dental Association (IDA) Vadodara, Gujarat regarding clinical photography. **Materials and Methods:** A cross-sectional survey of 193 dental practitioners registered in IDA Vadodara, Gujarat regarding clinical photography was conducted. The participant's information sheet was given to all participants, and a written informed consent was also taken from the participants. The questionnaire consisted of 16 questions which were divided into 3 sections that gave information regarding the knowledge, attitude, and practices regarding clinical photography. The descriptive statistical analysis was used for the study. **Results:** A total of 172 respondents completed the questionnaire forms. Under knowledge section, 64% dentists knew that digital single lens reflex (DSLR) was the best camera for taking clinical photographs. Under attitude section, (93% of practitioners were ready to invest <50,000 on digital equipment's whereas only 7% were ready to invest >50,000). Very few practitioners (5%) had attended more than 5 Continuous Dental Education (CDE) programs on digital dental practice. Under practice section, 53% of practitioners used a mobile phone only for taking clinical photography although they had knowledge that DSLR was the best tool for taking photographs. **Conclusion:** Dental practitioner's had good knowledge, fair attitude, and comparatively poor practice. Thus, more hands-on courses, workshops, and trainings for clinical photography should be encouraged for dental practitioners.

Key words: Attitude, clinical photography, dental practitioners, knowledge, practice

INTRODUCTION

"Digital India" is moving toward its goal with quick pace embracing advanced technologies and so is the Digital Dentistry. Photography in dentistry is one of the important aspects of Digital Dental era. Technological advancements in the field of digital photography have revolutionized the concept of photography as a powerful medium of expression and communication. However, the importance of photography as a clinical, administrative, and marketing tool is still lacking and needs great awareness.[1]

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At present, the clinical photography is extremely important for patient education in clinics, as a tool for making the patient understand the line of treatment and can also be very useful for medico-legal issues in country like India. Developments in digital photographic technology have facilitated the integration of photography into clinical dentistry, as many practitioners now have easy access to computers. This also facilitates practice and reduces dependency on paper records. Computerization combined with software enables the manipulation and storage of digital images and an easy transfer of data over the Internet.[2]

According to Sharland MC *et al*, dental practitioners usually ignore the clinical photography due to a shortage of time availability, lack of expertise in photography, inaccessible internet facilities, and expensive equipment. The disadvantages of digital photography include the initial capital outlay and constantly changing technology, with an initial steep learning curve that may appear daunting. Clinical photography is, however, no more intimidating than many clinical procedures. Digital technology appears to be here to stay along with digital broadcasting, digital consumer goods and digital radiography.[3] Dental Photography can be very well utilized for patients appropriate treatment planning and consultations.[4]

The digital single-lens reflex (DSLR) camera with a high-quality lens is considered as the ideal choice for dental photography, as it is capable of taking portraits as well as close up or macro images of the dentition. Intraoral or fiber optic cameras are also a useful tool for the demonstration of patients oral problems on a monitor.[5]

In India, as technology is emerging as a very powerful tool in all walks of life, importance of clinical photography in dentistry cannot be underestimated. Although excellent in the clinical approaches, Indian dentists are still lacking in the documentation of their clinical cases. Standardization of photographic shots is helpful in documentation and presentation. Transfer of digital images onto a computer and then over the Internet dramatically enhances their usefulness clinically, educationally, medicolegally and from a marketing perspective which is required in an Indian scenario.[6] These records may be important for education, medico-legal, carrying out future evidences, and support of different researches. Western countries have very well realized the importance of clinical photography for documentation and treatment planning purpose, thus are emphasizing its usage and training in their curriculum.

In India, the dental practice is still not insurance based or sponsored by any government agencies. Although digitalization is becoming very popular in all other areas, its utilization in clinical dental practice is lacking. There can be lot of studies regarding this topic in abroad, but in an Indian scenario where whole dental setup is done by individual dentist, his awareness and knowledge on this aspect of clinical photography does play a major role. Thus, the need was felt to conduct this survey as to know the knowledge, attitude, and practices of various practitioners of Indian Dental Association (IDA) Vadodara, Gujarat, on Clinical Photography.

MATERIALS AND METHODS

A cross-sectional survey was conducted between December 2016 and May 2017, involving a total of 197 Registered Dental Practitioners working in Vadodara district, Gujarat. Ethical approval was taken from Ethical Committee for the study (SVIEC/ON/DEN/SRP/16238). The participants randomly selected were all the Registered Dental practitioners who were having their own private clinic in Vadodara district, Gujarat, and were willing to participate and sign the informed consent. Academicians having their own private practice and registered with IDA Vadodara district branch were also included in the study. They were not chosen or segregated according to their clinical experience or any prior exposure to photographic practices.

The participants excluded from the study were dental surgeons associated with the government colleges and practices, only academicians, visiting consultants and participants who refused to participate in the study.

A questionnaire containing 16 questions covering the following three aspects was utilized:

- SECTION-1 General data
- SECTION-2 Knowledge, attitude, and practice
- SECTION-3 Reasons for not using clinical photography.

Participants who accepted that they practice clinical photography proceeded for Section 2, and those who denied, attempted Section 3 after Section 1.

The questionnaire was adapted from the previous study done by Morse *et al*. 2010[1] (Questionnaire on clinical photography in General Dental Practitioners [GDPs]). The permission to use the questionnaire was taken from the author, and it was further validated (Cronbach's alpha value – 0.742) according to local scenario and later distributed among the practitioners. Adequate printed copies of questionnaire form in the English language were given to the participants during organized IDA meetings. Prior appointment on the phone was taken from the participants who were not present in the meetings and were handed the questionnaire personally.

A total of 172 participants participated, and the results were divided into 3 sections based on the questions regarding to knowledge, attitude, and practice.

Statistics

The collected data were entered into the Microsoft Excel sheets. The data were analyzed using Microsoft Office Excel version 10 (IBM, New York, United States) and the descriptive statistics such as number and percentage were calculated.

RESULTS

Section 1 general data

Of the 172 respondents who filled the questionnaire, [Table 1] 54% of population were registered BDS and 46% were registered MDS. Among the list of specialization of MDS, 14% were prosthodontists, 26% oral surgeons, 9% conservative dentistry and endodontists 15% orthodontists, 7% pedodontists, 6% oral pathologists, 17% periodontists, 5% oral diagnosis and radiology, and 1% from Public health dentistry.

About 55% of practitioners worked single-handedly and 45% had set up of four-handed/group dentistry. 85% of practitioners had their clinics in city/town, 14% suburban, and about 1% in rural. Regarding their working pattern, 66% worked as private practitioners, and 34% worked as both private practitioners and as academicians. 71% of practitioners claimed about using photography in their daily practice whereas 29% were not using it. Therefore, they directly attempted Section 3.

Table 1: General data of participants (section-1)

General data	Overall (%)
1(a). Qualification	
BDS	54
MDS	46
1(b). MDS specialization	
Prosthodontics	14
Oral surgery	26
Conservative dentistry and endodontics	9
Orthodontics	15
Pedodontics	7
Oral pathology	6
Periodontology	17
Public health dentistry	1
Oral diagnosis and medicine	5
2. Type of practice	
Single-handed	55
Group-handed/four-handed dentistry	45
3. Location of practice	
City/town center	85
Sub-urban	14
Rural	1
4. Practicing as	
Private practitioners	66
Private and academician	34
5. Using clinical photography in your practice	
Yes	71
No	29

Section 2 knowledge, attitude, and practice

Knowledge

Sixty-five percent of practitioners had knowledge regarding macrophotography, whereas 35% did not. Opinion regarding what is best for photography 64% practitioners answered for DSLR, 18% fixed zoom lens camera, 17% point and shoot camera, and 1% answered mobile phone. Regarding how many photographs were needed for cases 90% answered >5 photos per case and 10% practitioners answered for <5 photos per case. When asked regarding uses of clinical photography, almost 80%–95% of participants answered for all uses [Table 2].

Table 2: Response of the participants regarding knowledge of clinical photography (section-2)

Knowledge	Overall (%)
6. Knowledge about macrophotography	
Yes	65
No	35
7. Best to be used for clinical photography	
Point and shoot camera	17
Fixed zoom lens camera	18
DSLR	64
Mobile	1
8. Photographs needed for patients	
>5 photos/case	90
<5 photos/case	10
9. The uses of clinical photography in your practice	
For preoperative/postoperative patients details	95
For patient instruction/motivation	90-95
For treatment planning	93-95
For liaison with your laboratory	90-95
For consultation with specialist	90
Medicolegal reasons	90
For teaching purposes	85-90
For promotion	85
For interest	80
For publications	90

DSLR: Digital single lens reflex camera

Attitude

Ninety-nine percent practitioners felt that clinical effectiveness was enhanced by clinical photography, whereas 1% did not feel. 97% of practitioners admitted to use clinical photography in future, whereas 3% would not. 93% of practitioners agreed to invest up to Rs 50,000 in a clinical photography system which would last and give best results and 7% admitted to invest more than Rs 50,000. 5% admitted to attend more than 5 CDE programs on clinical photography in the past year, 18% attended 3–4, 50% attended 1–2 and 27% had not attended any CDE programs [Table 3].

Practice

Fifty-three percent practitioners used mobile phone to take photographs in their daily practice, 28% used macro lens with DSLR, 13% used digital point and shoot camera and 6% used all the above-mentioned options in their daily practice. 18% of practitioners took photographs for all the patients and 82% took only for special cases. Regarding how many photographs were taken per week 18% of practitioners photographed about

0–5 cases, 54% about 5–10, and 28% photographed >10 cases each week. 60% practitioners stored their files in computer/laptop, 20% in pen drive/removable drive, 19% in Google drive/I cloud, and 1% on server [Table 4].

Section 3 reasons for not undertaking clinical photography

Twenty-nine percent practitioners filled this section as they were not using clinical photography in practice.

Ninety percent felt clinical photography was time consuming, 5% were concerned about high capital cost, 3% due to no perceived/demand, and 2% because of limited knowledge did not undertake clinical photography. 95% of practitioners admitted that they would start using clinical photography in future, whereas 5% said they would not commence taking clinical photography at some time in future also [Table 5].

DISCUSSION

According to Stieber J the photography and electronic media are essential tools for dental education and clinical practice. Although practitioners, institutes and individuals are having increased usage day by day, it is extremely important to develop policies also to ensure that patients' rights and their dignity is valued and maintained.[7] McLaren EA also stated that with the proper training, techniques, equipment, and implementation dental photography can meaningfully improve the level of treatment for the patients benefit.[8]

In general data (Section 1), 45% practitioners only had setup for four-handed/group dentistry; hence, assistance for taking clinical photographs was very less. More awareness regarding group practice/four-handed dentistry should be created to indirectly encourage clinical photography. 29% practitioners acknowledged not to use clinical photography in there practice and directly attempted Section 3. In this section, under the reasons for not undertaking clinical photography 90% cited as too much time consuming. However later, the 95% practitioners who were not using clinical photography acknowledged that they will start taking clinical photography at some time in future. Thus, the practitioners with opinion of considering it time consuming needs to be well trained by exposure to various programs and workshops. The undergraduate and postgraduate curriculum should also have some reforms which will sensitize the practitioners from very beginning regarding this aspect.

The major results of this study were based according to knowledge, attitude, and practice questions present in Section 2. In Section 2, under Knowledge questions, it was observed that about 65% practitioners had knowledge regarding macrophotography. About 64% dentists knew that DSLR was considered the best camera for taking clinical photographs. All the dentists and general practitioners were well aware regarding the effectiveness of clinical photography and its uses. The reason might be due to easy access of internet usage facilities, nowadays. All participated dentists were updated regarding all the latest developments in the

Table 3: Response of the participants regarding attitude on clinical photography (section 2)

Attitude	Overall (%)
10. Enhancement of clinical effectiveness by the use of clinical photography	
Yes	99
No	1
11a. Usage of clinical photography more in the future	
Yes	97
No	3
11b. If yes than, investment in clinical photography system which would last and give best results	
Up to 50,000/-	93
<50,000/-	7
12. Number of CDE programs attended on clinical dental photography	
0	27
1-2	50
3-4	18
5+	5

CDE: Continuing dental education

Table 4: Response of the participants regarding practice on clinical photography (section 2)

Practice	Overall (%)
13. Types of equipment used in practice	
Macro lens camera	28
Digital point and shoot camera	13
Mobile	53
All	6
14a. Practice of maintaining photographs for	
All the patients	18
Only special cases	82
14b. Clinical cases photographed each week	
0-5	18
5-10	54
>10	28
14c. Storage of file/photographs	
Computer/laptop	60
Removable disk/pen drive	20
Google drive/I cloud	19
Server	1

Table 5: Reasons for not undertaking clinical photography (section 3)

Reasons for not undertaking clinical photography	Overall (%)
15. Reasons for not undertaking clinical photography	
No perceived need/demand	3
High capital cost	5
Time consuming	90
Limited knowledge	2
Have no interest in photographs	0
Infection control risk	0
16. Expected commencement of taking clinical photographs	
Yes	95
No	5

fields of dentistry. Thus, it can be very well inferred that knowledge part was quite good in all the practitioners.

In section 2, under Attitude questions, although dentist had sound knowledge regarding photography but their attitude toward its applicability was fair. Only 7% practitioners were ready to invest in more than 50,000 on digital equipment as compared to 93% who were ready to invest for <50,000. Thus, the attitude to spend on digital equipment's was low. Very few practitioners 5% were attending more than 5 CDE programs on clinical photography which was also discouraging. 27% practitioners had not at all attended any CDE program on dental photography. Thus, after analyzing the results of attitude section, again the importance for sensitizing, conducting more hands-on courses and some attempts from government or private sector should be made, which will help in reduction of digital photography equipment costs.

In section 2, under Practice questions, 64% practitioners knew that DSLR was the best tool for photography as answered in knowledge questions but ironically 53% were still practicing taking pictures with mobile phones. This could be because the digital equipment's investment in India is still not so economical and handy, but mobile phones are the easy economical digital option available. 82% of practitioners took photographs of special cases where only 18% took for all cases. 28% photographed >10 photos of cases per week. Thus, the practice part also was very much lacking in the participating dentists.

Although dentistry emphasizes on master's degree and continuous education programs, still after conducting this survey it was felt that the technical, as well as photographic training, should be inculcated in the BDS and all specialized branches of MDS curriculum in the dental field. More hands-on courses, workshops and trainings to teach the practical approach should be encouraged. The digital cameras, equipment's, and computers should be available at subsidized costs to encourage the practice of digital dentistry in India.

The digital technology should also focus more toward health-care photography which should be ethical, cost effective, handy, less time consuming, and patient-friendly. Future multicenter surveys can also be conducted to come to a better conclusion regarding the scenario of digital clinical photography in India.

CONCLUSION

Within the limitations of this conducted cross-sectional survey, it may be concluded that though, dental practitioners had knowledge and attitude was fair, practice was comparatively poor with respect to clinical dental photography.

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Conflicts of interest
There are no conflicts of interest.

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