

# Use of Dental Photography by General Dental Practitioners in Great Britain

M.R. SHARLAND, F.J.T. BURKE, S. McHUGH AND A.D. WALMSLEY

**Abstract:** This study assesses, by means of a postal questionnaire, the numbers of general dental practitioners who use clinical photography, and the uses to which this is applied. The questionnaire was distributed to 1000 randomly selected GDPs in Great Britain. A response rate of 76% was achieved. Of the respondents, 36% used clinical photography, with 65% of those using an intra-oral 35 mm camera, 18% a digital camera and 12% an intra-oral digital video camera. Principal uses of clinical photography were patient instruction/motivation (72%), medico-legal reasons (68%), treatment planning (63%), and liaison with laboratory (43%).

*Dent Update* 2004; 31: 199–202

**Clinical Relevance:** Clinical photography has a wide variety of uses, including treatment planning and patient instruction.

The use of clinical photography has been advocated in general dental practice for many years,<sup>1</sup> with its clinical uses having been considered to be in treatment planning, documentation of long-term results of treatment, self-evaluation – learning from mistakes and successes, evaluation of oral conditions, including pathology, patient education, and referrals to specialists.<sup>2</sup> Case-specific uses include dento-legal documentation, protection against patient litigation, providing information for the dental technician, and providing

information for the Dental Practice Board, for those dentists working within the NHS regulations in the UK.<sup>2</sup> General uses may include staff training and illustrations for lectures and case reports, such as are required by a number of clinically-oriented examinations.<sup>2</sup> It has also been considered that clinical dental photography may be used in a variety of creative ways, thereby enhancing a practice, with patients being impressed by the use of photography.<sup>3</sup>

Clinical dental photography requires the purchase of specialized equipment,<sup>3-5</sup> and this expense may limit its use. However, a lack of perceived need and limited understanding of ‘close up’ photography may also be factors that have hindered its adoption in UK general dental practice. Perhaps, it has often been the keen amateur photographer who has taken up the challenge. However, with the recent advances in technology and the advent

of digital cameras (Figure 1), this has the potential to change. It may be considered that digital imaging is easier to learn and use than conventional photography and may therefore be a more attractive proposition to the busy practitioner. Moreover, the costs of processing film are absent when digital photography technology is employed. A digital image may be viewed as soon as it has been taken, and there is the ability to store digital records on a home or work PC. The dust and scratches of 35 mm slides may now be a thing of the past.<sup>6</sup> Indeed, visual aids in the dental practice have in the past had limited use owing to the complex nature of their production. With a digital camera, PC and printer the scope and applications of visual aids is vast.



Figure 1. Digital cameras.

**M.R. Sharland**, Head of Multimedia Services, **F.J.T. Burke**, DDS, MSc, MDS, MGDS, FDS RCS(Edin.), FDS RCS, FADM, Professor of Primary Dental Care, **A.D. Walmsley**, BDS, MSc, PhD, FDS RCPS, Professor of Restorative Dentistry, University of Birmingham School of Dentistry, St. Chad's Queensway, Birmingham B4 6NN and **S. McHugh**, BSc(Hons), GRAD.STAT, Research Statistician, Glasgow Dental School, 378 Sauchiehall Street, Glasgow G2 3JZ.

Use	Number	Photography users (%)
Patient instruction/motivation	197	72
For interest	191	70
Medico-legal reasons	185	68
For treatment planning	172	63
Liaison with laboratory	118	43
For teaching	108	39
Recording restoration performance	100	37

Table 1. Uses of clinical photography in practice cited by respondents.

A Medline search has identified 21 papers on dental photography since 1987, but none has assessed the number of users of clinical dental photography. The aims of this study are therefore:

- To determine the proportion of UK-based general dental practitioners (GDPs) who use clinical photography in their practices;
- To ascertain its uses in dental practice;
- To determine the reasons why non-users do not make use of clinical photography.

Subsequent papers in this four part series will describe the role of digital photography for dental practitioners.

## MATERIALS AND METHODS

A questionnaire was designed to determine dentists' use or non-use of clinical photography and the factors which may influence this. The majority of the questions related to demographic details of the respondents and details of their use, or otherwise, of dental photography. The questionnaire was piloted among a group of 10 GDPs and, following minor amendments, it was distributed to 1000 GDPs in the UK, whose names were obtained by random selection from Health Authority lists of GDPs. The questionnaire was accompanied by a reply-paid envelope and a letter of explanation, requesting completion and return of the questionnaire within a one-month period. The questionnaire and accompanying letter were designed in accordance with the Total Design Method considered appropriate by Dillman.<sup>7</sup> A second questionnaire was

sent after three months in an attempt to gain responses from non-responders to the first mailing.

The data contained in the returned questionnaires were entered into a Microsoft Access database and subsequently analysed using Minitab (version 12). Further data analysis involved descriptive statistics and cross-tabulations, with potential associations tested for statistical significance using Chi-square tests and appropriate follow-up multiple comparisons as necessary.

## RESULTS

All respondents did not answer every question, hence total numbers responding to each question varied.

### General and Demographic Data

Replies were received from 759 dentists, a response rate of 76%. Forty-eight per cent (n = 479) responded after the first mailing, and a further 28% (n = 280) after the second mailing. Seventy-five per cent (n = 568) of the respondents were male. Regarding years since graduation, 10% (n = 71) had graduated between 0 and 5 years ago, 13% (n = 99) between 6 and 10

years, 37% (n = 270) between 11 and 20 years and 40% (n = 295) 21 years or more. Thirty per cent (n = 225) practised single-handedly. Fifty-seven per cent (n = 430) of the respondents' practices were 'mainly National Health service (NHS)', 11% (n = 88) were 'mainly private' and 32% (n = 241) were mixed NHS/private. Regarding attendance at postgraduate courses or meetings during the year preceding the survey, 4% of respondents (n = 33) stated that they had attended no courses, 14% (n = 105) had attended 1–2 courses, 29% (n = 217) had attended 3–4 courses and 53% (n = 404) had attended 5 or more. Of the respondents who had attended courses, 5% had attended a course on dental photography.

Thirty-six per cent of respondents (n = 273) indicated that they used some form of clinical photography in their practices.

### Uses of Dental Photography

Of the 273 respondents who stated that they used clinical dental photography, 65% (n = 177) used an intra-oral 35 mm camera, 18% (n = 51) used an intra-oral digital still camera, 12% (n = 35) used an intra-oral video camera and 5% (n = 15) used 'other' types of photographic equipment. Some respondents used more than one type of camera. The uses for which respondents used their photographic equipment are shown in Table 1, with patient instruction and motivation being the most frequently quoted reason. Table 2 presents the respondents' views on the usefulness of clinical photography.

Regarding frequency of use of clinical dental photography, 67% of users of photography (n = 178)

Function	Very useful (%)
Medico-legal reasons	45
Patient instruction/motivation	41
Teaching	31
Interest	28
Treatment planning	20
Liaison with laboratory	16
Recording restoration performance	15

Table 2. Usefulness of clinical photography given by those respondents who did use clinical photography.

Reason	Number	Non-users (%)
No perceived need/demand	250	50
High capital cost	215	43
Too time consuming	205	41
Poor NHS fees	180	36
Not sure of what's involved	97	19
No interest	66	13
Infection risk	26	5
Other	28	6

**Table 3.** Reasons for not undertaking clinical photography given by those respondents (n = 501) who did not use clinical photography.

photographed 1–5 cases per week, 11% (n = 28) photographed 6–10 cases per week and 14% (n = 36) photographed more than 10 cases. Images were stored most frequently in patients' notes (43%: n = 118), albums (13%: n = 35) and files or albums (12%: n = 33).

Eighty-three per cent (227) of respondents who used photography considered that they would use clinical photography more in the future. Eighty per cent of users (n = 219) considered that their clinical effectiveness was enhanced by the use of clinical photography.

### Associations Between use of Clinical Photography and Demographic Factors

- There was an association between use of clinical photography and gender, with a significantly greater percentage of males using clinical photography (p < 0.001).
- There was an association between use of clinical photography and years since graduation (p = 0.051), with those graduated most recently (0–5 years) and those graduated longest (> 20 years) being less likely to use clinical photography than those who had graduated between 6 and 20 years.
- Practice principals were significantly more likely to use clinical photography than respondents who were associates or 'other' (p < 0.001), where other includes vocational dental practitioners or assistants.
- A greater proportion of respondents in private practice were users of clinical photography

than respondents from mixed NHS/private or NHS practices (p < 0.001).

- Significantly more respondents in specialist practices used clinical photography than those in general practices (p < 0.001).
- Significantly more respondents who have attended > 5 courses used clinical photography than the percentage who have attended 0–4 courses (p < 0.001).
- There was an association between use of clinical photography and attendance at courses on dental photography (p < 0.001), with a greater percentage of respondents who had attended such a course indicating that they used clinical photography.
- There was also a significant association between use of clinical photography and the geographical area of the respondents' practices (p = 0.003), with a significantly greater percentage of respondents from the Midlands indicating that they used clinical photography than respondents from Wales, Scotland or the South of England, but no difference between respondents from the Midlands and the North of England (Figure 2).

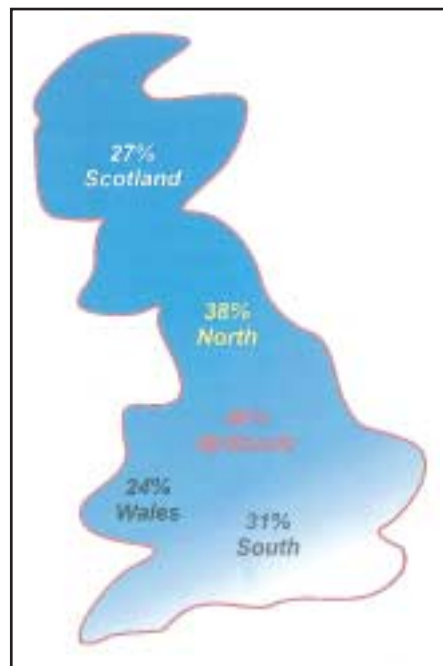
### Non-Users of Dental Photography

Five hundred and one responses were received in this section. Reasons for not undertaking clinical photography are listed in Table 3. Of these respondents, 51% (n = 256) felt that they would commence using clinical

photography at some time in the future, with 56% of these (n = 144) estimating that they would commence taking clinical photographs within 2 years, and 44% (n = 112) within 5 years.

### DISCUSSION

This study has achieved a high response rate, well in excess of the mean value reported for response rates to mailed questionnaires<sup>8</sup> to dentists. This may be considered to indicate a high level of interest in the subject, although, conversely, non-responders may have had no interest, and therefore did not reply. Thirty-six per cent of respondents indicated that they used some form of clinical photography and analysis of the data indicated that users were more likely to be male, practice principals, attendees at > 5 postgraduate courses per annum, graduated between 6 and 20 years ago, in private practice, in specialist practice and in the North or Midlands of England. Unsurprisingly, associates and new graduates, who could be considered not to have settled into one practice location, had embraced clinical photography to a lesser extent.



**Figure 2.** Use of clinical photography by geographic area of those replying to questionnaire.

A majority of respondents who used clinical photography used intra-oral 35 mm cameras, but almost one-fifth used a digital camera, which might be considered surprising, given the comparatively recent introduction of types of this equipment which could be considered appropriate for intra-oral photography. However, this rapid embracement of the latest technology could indicate an awareness of the ease of use of such equipment and potential for easy storage of images on a computer and the lack of requirement for developing, printing and/or slides. It could be envisaged that the time will not be far away when 35 mm clinical photography is a thing of the past.

Twelve per cent of respondents who used clinical photography used an intra-oral video camera, which, given its high cost, may also be considered encouraging.

Users of clinical photography considered that their photographic equipment was appropriate for a variety of uses, with patient instruction, medico-legal reasons and treatment planning featuring most often. However,

'interest' also featured strongly as a reason, which might, again, reinforce the opinion, stated above, that those who were interested in the subject replied. It is also relevant to draw attention to the high proportion of respondents who stated medico-legal as a reason for use of clinical photography, perhaps indicating the respondents' awareness of the litigious times in which they practice. This may be a reason for the increased use of clinical photography by specialists, whose clinical load may embrace more complex treatments than the GDP.

### CONCLUSIONS

Clinical photography was used by 36% of general dental practitioner respondents. Males, specialist and private practitioners, and practitioners from the Midlands were more likely to be users of clinical dental photography than other groups. Principal reasons for use were for patient instruction, for interest and for medico-legal reasons. Only 8% of respondents had attended a course on

dental photography, so there would appear to be a need for more postgraduate courses on this subject.

### ACKNOWLEDGEMENTS

Thanks are due to Miss Lizzie Sharland for collating and computerizing the results and to the respondents for completing and returning the questionnaires.

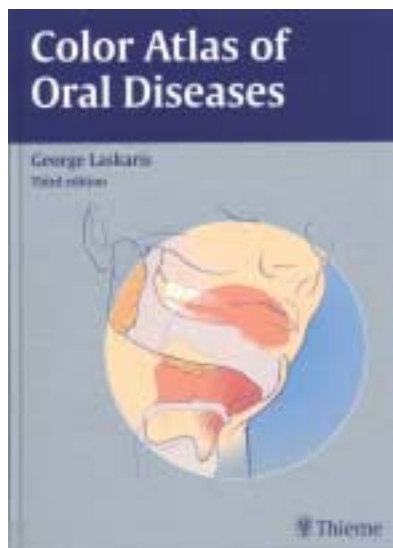
### REFERENCES

1. Norman DH. Photography. *Dent Update* 1973; **1**: 53-58.
2. Wander P. Photography 1: Uses in general dental practice. *Dent Update* 1983; **11**: 297-304.
3. Swift EJ, Quiroz L, Hall SA. An introduction to clinical dental photography. *Quintessence Int* 1987; **18**: 859-869.
4. Wander P. Photography 2. Close-ups: Principles and equipment. *Dent Update* 1983; **11**: 357-364.
5. Gordon P, Wander P. Specialised equipment for dental photography. *Br Dent J* 1987; **162**: 346-359.
6. Sandler J, Murray A. Digital photography in orthodontics. *J Orthodont* 2001; **28**: 197-201.
7. Dillman DA. *Mail and Telephone Surveys; The Total Design Method*. New York: John Wiley and Sons, 1977.
8. Tan RT, Burke FJT. Response rates to questionnaires mailed to dentists. A review of 77 publications. *Int Dent J* 1997; **47**: 349-354.

### BOOK REVIEW

**Color Atlas of Oral Diseases**, 3rd edition. By George Laskaris. Thieme, New York, 2003 (372pp., 139 EUR(D), 211 CHF). ISBN 1-58890-138-6 (The Americas); 3-13-717003-6 (Rest of world).

This is a comprehensive atlas, beautifully illustrated, which runs to over 400 pages. The book is divided into 39 sections and includes normal anatomic variants as well as a wide range of oral lesions. The layout is that of a brief summary of each condition, followed by differential diagnosis, laboratory tests where appropriate and treatment. Some chapters are devoted to an anatomical site, others to group lesions of similar aetiology, presentation, or systems involved. There is extensive coverage of infections, with a separate section on HIV infection and AIDS, which also covers other manifestations of this condition. The chapters on benign and malignant



tumours and on malignancies of the haematopoietic and lymphatic tissues are excellent and provide a useful guide to conditions that are rarely encountered by most clinicians. The chapter on odontogenic tumours is less comprehensive.

Included is a chapter on oral lesions

due to drugs, an increasingly important area. A useful addition would have been a section on lichenoid lesions. Some conditions, such as pemphigoid and pemphigus, that are included in the chapter on skin diseases, although well covered, might have been listed instead in the chapter on diseases with possible immunopathogenesis. This would have given prominence to this rapidly developing area of knowledge.

The atlas is supported by an extensive bibliography at the end, divided into sections corresponding with the chapters in the main text. An excellent feature of the index is that page numbers in bold type indicate illustrations. The photography is of outstanding quality.

This book was a pleasure to read and would make a good reference source for the specialist in oral medicine as well as other practitioners.

**Andrea Richards**  
University of Birmingham Dental  
Hospital