

The demographic and academic profile of Irish dental school faculty members

Précis: This study provides a detailed profile of Irish dental school faculty members, considers future challenges and explores staff perceptions of faculty duties.

Abstract

Aim: This paper reviews the demographic, academic and professional profile of Irish dental school faculty members. Faculty duties are explored.

Methods and materials: Custom-designed questionnaires were distributed to faculty members for self-completion, adopting a 'mixed-method' approach with quantitative and qualitative components. Response rate was 64.6%.

Results: Demographic profile reveals a male-dominated regime (64%). Males also occupy a disproportionate number of senior academic positions. The age profile mirrors international trends with 75% of staff over 40 and c.33% over 50, including 78% of professorial staff ($p < 0.001$).

Dental school faculties are comprised of highly educated professionals with the following qualifications: 89% BDS, 43% FDS, 39% Masters, 16% Doctorates. Most (77%) have 10+ years of clinical experience, while 47% have over 20 years' experience. Clinical experience varied by age, rank ($p < 0.001$) and gender ($p < 0.05$). A review of contractual agreements and duties confirms the major role of part-time clinical staff in dental education, comprising the largest single group (48%) delivering the bulk of the clinical teaching. However, 54% of part-time clinical staff have less than five years teaching experience. This study also explores staff views of various faculty roles.

Conclusions: This report provides a benchmark profile of Irish dental school faculty members. It reflects on the heavily skewed age groups of our current dental educators and the impending retirement of many senior academics. Educational organisations need to explore ways to make a career in dental education financially and sociologically attractive and provide adequate support for existing faculty to ensure their development during these challenging times.

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Introduction

The last 50 years has been a period of unprecedented change in higher education, combining tremendous growth and pedagogical advances with unparalleled challenges for all involved. Changing economic, social and knowledge contexts have resulted in a paradigm shift from the traditional post-war model of the teacher as an autonomous professional. Indeed, what students learn, "what they must achieve as the outcome of learning and what standards apply are now explicitly the everyday business

of government".¹ Faculty members face many complex challenges, including increased public accountability, higher student expectations, and increased student diversity, as well as the impact of technological advances, and changing paradigms in teaching and learning.

Dental school faculty members must also face additional challenges due to shifting disease patterns and patient demographics, changing societal culture affecting demand for treatment, and the need to integrate scientific advances into practice, along with

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demands from accreditation bodies for radical curricular change. Furthermore, as “dental education is the most costly professional degree within the entire university portfolio”,² dental faculty members face mounting pressure to maintain high educational standards against the current background of fiscal constraints and dwindling resources. Faced with such challenges, the changing nature of academic appointments and the income differential between academic dentistry and private practice, many institutions are now facing a shortage of faculty staff. International research suggests that dental faculty staff are ageing, and notes a paucity of enthusiastic applicants seeking to replace those who reach retirement age. This paper provides a detailed demographic, academic and professional profile of Irish dental school faculty members, explores the duties undertaken by faculty members, and the degree of satisfaction derived from these tasks, issues previously unexplored in this country.

Methods and materials

All 130 dental faculty members at Cork University Dental School & Hospital (CDH), UCC, and Dublin Dental School (DDH), TCD, were invited to participate in this study. “Faculty” was defined as “all part-time and full-time staff involved in teaching undergraduate/postgraduate dental and/or dental hygiene students” in an Irish dental school. The research methodology involved a custom-designed self-administered questionnaire (31 fields), using a ‘mixed quantitative/qualitative’ approach.

The overall response rate was 64.6%. While an excellent response rate was achieved in the Cork centre (50/55, 90.9%), a much lower response rate of 45.3% (34/75) was achieved from Dublin Dental Hospital. There were 83 valid respondents, 50 (60.2%) from CDH and 33 (39.8%) from its equivalent in Dublin. The lower response rate from DDH may be related to the inability of the researcher to gain direct access to DDH staff on the grounds of privacy and confidentiality. The subsequent loss of control over questionnaire distribution, and inability to issue personalised reminders and to verify staff rank and numbers may have introduced a certain degree of volunteer bias. Bell³ warns that “non-response is a problem because of the likelihood – repeatedly confirmed in practice – that people who do not return questionnaires differ from those who do”. While ‘volunteer bias’ of this nature may be overcome by offering incentives to encourage participation, sending reminders and making follow-up calls to those who do not respond initially, the provision of anonymity in this study removes these options. Data analysis was therefore undertaken for the combined data and by individual site, to investigate response patterns and reduce the impact of volunteer bias. Statistical analysis was undertaken using SPSS-14, standardised statistical descriptive techniques and Chi-square tests.

Results

Basic demographics: age and gender profile

Analysis of the demographic profile of Irish dental school faculty members reveals a male-dominated regime (64%), with a marked gender imbalance noted among the 30- 39-year age group (85% male), as highlighted in **Figure 1**. Indeed, 70% of DDH respondents

and 60% of CDH staff were male. Males also occupy a disproportionate number of senior academic positions – 57% of lecturer/consultant positions, and 89% of professorial appointments. This concurs with international reports of lower rates of advancement among female dental faculty staff.^{4,5}

Several authors have commented on the ageing profile of dental faculty members internationally, expressing concern regarding the impending retirement of many senior academics.^{6,7} The age profile of Irish dental school faculty members mirrors international trends as 75% of staff are over 40 years of age and almost one-third (28% in CDH, 33.3% in DDH) are over 50, including 78% of the professorial staff ($p < 0.001$). A similar ageing profile is noted among full-time faculty members as most (77%) are over 40 and one-third are over the age of 50. Only eight (9.6%) of the respondents were under 30, while 13 belonged to the 30-39 years category.

Academic achievements

As expected, the vast majority (89.2%, 74/83) of the series were dental graduates. The nine non-dental graduates comprised five females and four males; all but one were over the age of 40; the majority (88.9%, 8/9) worked in CDH. Analysis of the qualifications held by this subgroup revealed that four were science graduates (two had attained a masters degree and one a doctorate), while the remainder held various diplomas. Two were employed as instructors, three as college/clinical lecturers and four were part-time clinical staff.

Almost half of the respondents (43%, 36/83) held a fellowship degree – 50% of females (15/30) and 40% (21/53) of males. Approximately one-sixth of the respondents had attained a Masters of Science (16.9%) or doctorate (15.7%) while one-tenth had been awarded a Masters in Dental Surgery. The proportion of respondents with doctorate degrees was similar at both study sites (16% in CDH, 15.2% in DDH); all but one were over 40 years of age and the majority were male (10/13). Those with a Masters of Science degree were predominantly male (85.7%, 12/14), most were dental graduates (11/14, 78.6%), and 64% were CDH faculty members (9/14). On the other hand, a significantly higher proportion of the Masters of Dental Surgery graduates were employed by the DDH (24% versus 2%; $p < 0.001$). Just five (6%) respondents held both medical and dental degrees.

Timing of last degree

While 32% (26/81) of the faculty members had completed a degree course within the last six years, almost half (43%) of the respondents had not engaged in formal education for over ten years. Indeed, one-sixth, including all professorial staff, had not done so in 20 years ($p < 0.001$). The time elapsed since last degree was inversely related to rank and age ($p < 0.001$). While all NCHDs had completed degrees within five years, only eight experienced staff members obtained a formal degree/diploma in this time, and just one professor had gained additional qualifications since 1990.

Clinical experience

The study indicates that Irish dental school faculty members are largely comprised of experienced clinicians. Indeed, the vast majority

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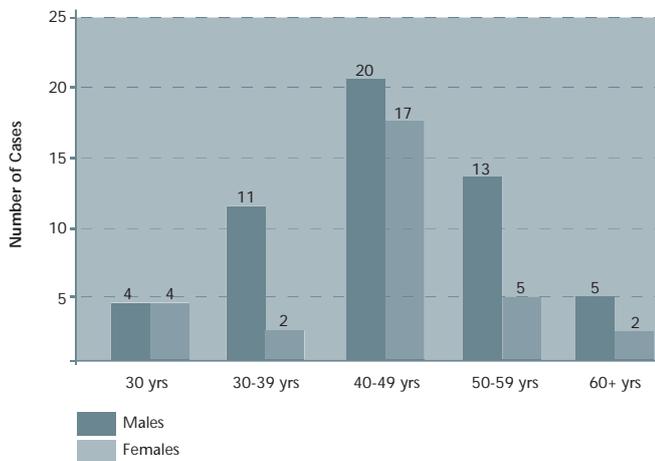


FIGURE 1: Age category distribution by gender.

(77%, 60/78) have at least a decade of clinical experience, with similar rates reported by Cork and Dublin respondents (76.6% CDH, 77.4% DDH); almost half (47%) have over 20 years' experience with similar rates recorded in both sites (42.5% CDH; 45.1% DDH). Not surprisingly, older and more senior staff tend to have more clinical experience ($p < 0.001$). Interestingly, clinical experience varied significantly between males and females, 54% of males having over 20 years' clinical experience (compared to 38% of females) and 29% of males having over 30 years' experience compared with only 7% of females ($p < 0.05$).

Teaching experience

The study indicates that most (76%) of the Irish dental school faculty members have at least five years' educational experience and more than half (54%) have been involved in dental education for over a decade. Not surprisingly, older and more senior staff tended to have greater teaching experience ($p < 0.001$); senior academics generally have at least ten years' teaching experience and most (78%) of the professorial staff have over 20 years' educational practice ($p = 0.002$). However, more than half (54%) of the part-time clinical teachers have less than five years' teaching experience; few (12.5%) have more than 20 years' experience. As clinical teaching is the 'linchpin' of dental education and the bulk of this work is undertaken by the part-time clinical staff, this finding is quite significant. This sub-group accounts for 48% of the entire dental school faculty (Table 1). Indeed, one-sixth (15.3%) of the respondents are employed on an occasional basis (less than one session a week).

Irish dental school faculty duties and satisfaction rating

The questionnaire explored the various duties undertaken by Irish dental school faculty members, focusing primarily on the tasks attributed to university faculty members in the literature, namely: delivery of formal lectures and tutorials/seminars; laboratory and clinical supervision; and, curriculum development. All 83 respondents completed this section of the questionnaire. Respondents were also asked to select their most and least preferred teaching format. Eleven subjects were excluded from this part of this analysis, as six (7%) omitted this section (Q10) and four (5%)

Table 1: Frequency distribution of academic rank by site and sex.

| Academic rank | Frequency % | CDH | DDH | Male | Female |
|--------------------|----------------|----------------|----------------|-----------|-----------|
| NCHD – SHO/ | | | | | |
| registrar | 4 4.8% | 4 8% | - | 3 (6%) | 1 (3%) |
| Instructor | 2 2.4% | 2 4% | - | 1 (2%) | 1 (3%) |
| Part-time clinical | 40 48.2% | 25 50% | 15 45.0% | 25 (47%) | 15 (50%) |
| Lecturer | 14 16.9% | 5 10% | 9 27.3% | 8 (15%) | 6 (20%) |
| Consultant/ | | | | | |
| Senior lecturer | 14 16.9% | 9 18% | 5 15.2% | 8 (15%) | 6 (20%) |
| Professor | 9 10.8% | 5 10% | 4 12.1% | 8 (15%) | 1 (3%) |
| Total | 83 100% | 50 100% | 33 100% | 53 | 30 |

said they "enjoyed all" teaching formats, while one consultant "enjoyed none", resulting in 72 valid responses (Table 3).

(i) Formal lectures

Less than half (43%) of the respondents deliver formal lectures (Table 2) with similar rates recorded for Cork (42%) and Dublin (45.5%). Lectures were generally delivered by those in senior academic positions. Indeed, 50% of the lecturers, 93% of the consultant/senior lecturers and 89% of the professors were involved in this process, compared with 17% of the part-time clinical staff ($p < 0.001$). Most of those involved in lecturing (88.9%) were over 40 years of age ($p < 0.05$), and the vast majority (75%) were employed on a full-time basis ($p < 0.001$). However, while most of the lecturers have a wealth of clinical and teaching experience, qualitative data from two open-ended questions asking respondents to state which teaching format they most enjoy and which they least enjoy, suggest that formal lectures are unpopular with faculty members. In fact, only one respondent said the formal lecture was his preferred teaching format while another expressed a joint preference for formal lectures and "hands-on" teaching (both male DDH faculty members). Indeed, over half (52%) of the respondents said the formal lecture was their least favourite method of teaching. A higher rate of dissatisfaction with the lecture format was recorded among Cork faculty members (58%) than Dublin respondents (43%). Qualitative comments suggest that staff find the "transmission mode delivery", "daunting" and "sterile", declaring that it offers "little opportunity for feedback". In fact, faculty members expressed major reservations on the value of this teaching format saying: "A lot of content can go unexplained if students feel they can't ask a question". The age-old issue of 'coverage versus content' was also raised as staff felt lectures required "too much material to be covered in too short a time frame", while providing "no evidence of student learning". Time was also a major issue as several staff complained about the "amount of time involved in preparation". However, two respondents preferred the didactic approach, contending that with "formal lectures you get the background of the topic" and "you are sure all the relevant information has been covered".

Table 2: Frequency distribution of faculty duties by site and significant factors.

| Role | N | % | CDH | DDH | Significant variables |
|------------------------|----|------|-----|-------|---|
| Formal lecture | 36 | 43.4 | 42% | 45.5% | Age, rank, contact hours |
| Tutorial | 50 | 60.2 | 58% | 63.6% | Age, rank, clinical experience, contact hours |
| Laboratory | 27 | 32.5 | 32% | 33.3% | Formal lecture, tutorial |
| Clinical supervision | 72 | 86.7 | 86% | 87.9% | Age, rank, contact hours |
| Curriculum development | 29 | 34.9 | 32% | 39.4% | Age, rank, full-time, teaching and clinical experience, contact hours. Lecture/tutorial delivery. |

(ii) Clinical teaching

The vast majority of the respondents (over 90%) preferred the small group teaching sessions (clinic, laboratory, seminar teaching) to formal lectures (Table 3). Clinical teaching was clearly the preferred format (65.3%) followed by seminar teaching (15.3%). While most staff (87%) are involved in clinical supervision to some degree, including 64% of the lecturers, 89% of professors and 93% of senior lecturers/consultants ($p < 0.005$), part-time clinical staff play a major role in this teaching format. Indeed, 74% of the clinical teaching load is carried by staff with less than 15 contact hours per week ($p < 0.005$). The qualitative data suggest that faculty members derive considerable personal satisfaction from clinical teaching, enjoying the combination of "hands-on patient care" and "one-to-one interaction", "helping the students ... to try and develop good habits early in their career" and "seeing students develop in their clinical skills and professionalism". Staff find clinical teaching "much more manageable" than other teaching formats and "feel confident and experienced in clinical environment – second nature compared to classroom work". Many faculty members feel that clinical teaching is particularly helpful to the students as it is the direct "application of knowledge and skills" ... "applicable for work for rest of professional life", forming the "basis of dental practice". However, many staff find clinical teaching quite stressful due to "conflict between best interest of students and patients". Operational issues, such as red tape, hospital politics, inadequate working conditions, inappropriate student numbers and time constraints were cited as issues that compound the difficulties faced by those engaged in clinical teaching, as illustrated below:

"Having too many students to supervise with difficult problems and having to treat patients myself at the same time. Too stressful and potentially dangerous" [R 25]

"Clinical – lots of red tape and problems associated with the politics" [R 23]

Table 3: Preferred teaching format by frequency and site.

| Preferred format | N | % | CDH (43) | DDH (29) |
|--------------------------|-----------|-------------|-------------|-------------|
| Clinical | 47 | 65.3 | 67.4% (29) | 62.1% (18) |
| Seminar | 11 | 15.3 | 18.6% (8) | 10.3% (3) |
| Miscellaneous** | 5 | 6.9 | 2.3% (1) | 13.6% (4) |
| All small group teaching | 4 | 5.6 | 7.0% (3) | 3.4% (1) |
| Laboratory based | 3 | 4.2 | 4.7% (2) | 3.4% (1) |
| Formal lecture | 1 | 1.4 | 0% | 3.4% (1) |
| PBL | 1 | 1.4 | 0% | 3.4% (1) |
| Total | 72 | 100% | 100% | 100% |

**Clinic and seminar (2): Lecture and hands-on (1): Curriculum development (1): Clinic and laboratory (1): PBL (1)

"Clinical teaching – poorly organised – not enough DSAs" [R 38]

(iii) Seminar/small group tutorial teaching

Seminar teaching is the second most preferred teaching format and is considered by many to be the most predictable, relaxed and effective teaching environment. Seminar (tutorial) teaching is mainly undertaken by senior staff – 86% are over 40 years of age, 62% hold a rank of lecturer or above ($p = 0.006$) and most (83%) have over 15 years' clinical experience ($p < 0.05$). A significantly higher proportion of full-time staff are involved in this teaching format (80% of full-time versus 43% of part-time, $p < 0.05$). Qualitative comments suggest that faculty members think that seminars give a "better opportunity for interaction", are "more student orientated than dictatorial", and provide the ideal format to "encourage good patient care and treatment and to help students with their clinical studies with small tips of advice". However, staff also criticised the lack of structure and guidance given to those involved in seminar teaching while some felt vulnerable "due to lack of training and experience" and uncertainty regarding "exact hospital teaching" and "recent advances in dentistry".

(iv) Laboratory-based teaching

Most of the staff involved in laboratory teaching felt it provided a "great time to teach the basics and teach them correctly" as the "hands-on approach" "offers opportunity to engage with the students ... individuals can be catered for more easily", giving "better interaction all-round!" However, some found lab teaching "unfulfilling, abstract and boring". Interestingly, 70% of those involved in this format were also involved in lecturing ($p < 0.001$) and tutorial delivery (89%, $p = 0.006$), and thus they were well positioned to compare the various formats.

(v) Curriculum development

One-third (34.9%, 29/83) of the respondents were involved in curriculum development (DDH 39%, CDH 32%). Those involved

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tended to be full-time faculty members (79%, 23/29; $p=0.001$) who are over 40 years of age (93%, $p=0.017$), drawn from the higher academic ranks ($p<0.001$). Most have at least 16 years of clinical experience (88.5%) and over 11 years of teaching practice (62%), ($p<0.005$). While over 90% are also involved in lecture and tutorial delivery ($p<0.001$), only 21% (6) had more than 20 student contact hours per week ($p=0.002$). Interestingly, consultants appear to have a greater input into curriculum development than professors (79% versus 67%), while relatively few lecturers and part-time clinical staff are involved in this process (36% and 21%, respectively).

(vi) *Problem-based learning (PBL)*

In recent years, the use of problem-based learning (PBL) has grown in popularity in many dental schools. While the curriculum in the DDH is almost entirely based on a PBL format, this approach has not been adopted in CDH. However, some Cork staff had previous experience of PBL. It is therefore interesting to note that none of the Cork respondents and only one Dublin respondent listed PBL as their preferred teaching method. While this individual [R42, DDH] suggested that PBL promoted "lasting learning", two of his colleagues [R47, R51] said PBL was their least preferred teaching format as it "often leaves large gaps that are not consistent between groups in a year". These results suggest that clinicians and academics alike do not favour this approach.

Discussion

One of the main aims of this study was to develop a greater understanding of the professional and demographic profile of Irish dental school faculty members. A major issue exercising the minds of those charged with the provision of dental education is how to ensure a sufficient number of highly trained faculty members into the future. Several authors have commented on the ageing profile of dental faculty members, expressing concern regarding the impending retirement of many senior academics.^{6,7,8} Indeed, dental education is said to be facing "a crisis ... unless interventions occur soon to develop, recruit, and retain future faculty".⁹ The age profile of the Irish dental faculty members in this study is heavily skewed in line with international trends, as reported by Livingstone *et al.*⁵ Most (75%) of the respondents were over 40 years of age and almost one-third (28% in CDH, 33.3% in DDH) were over 50, including the vast majority (89%) of the professorial staff. While DDH staff appear to be significantly older than their Cork colleagues, as none of the Dublin respondents were under the age of 30 compared with one-sixth of the Cork staff (0% in DDH; 16% in CDH; $P<0.05$), this finding is considered attributable to either 'volunteer bias' or the exclusion of the non-consultant hospital dentists (NCHDs) by those charged with questionnaire distribution.

This study indicates that Irish dental school faculties are male dominated (64%), with a marked gender imbalance noted among the 30- 39-year age group (85% male). Similar trends have been reported in the US where females comprise 52% of the overall population, but just 24% of the dental faculty.¹⁰ Males also occupy a somewhat disproportionate number of senior academic positions,

accounting for 57% of the lecturer and/or consultant positions and 89% of the professorial appointments. While this may, in part, be related to the longer service record attained by males, both in terms of teaching and clinical experience, lower rates of advancement among female faculty members have also been reported elsewhere. Indeed, Waldman⁴ noted that only 6% of female dental educators achieved professorial level compared with 22% of their male colleagues, while Nesbitt *et al.*⁵ reported rates of professorial achievement of 43% in men versus 15% among women. Such reports lead Livingstone *et al.*⁷ to conclude that "gender diversity has yet to be achieved in dental education".

Irish dental school faculty members are largely comprised of highly educated professionals as the vast majority (89%) have completed the five-year Bachelor of Dental Surgery Degree programme, while a high proportion attained further qualifications including Professional Fellowships (FDS; 43.4%), Masters Degrees (38.5%) and Doctorates (15.7%). Furthermore, many members seem to have maintained their interest in education, as one-third (32%) completed third-level degree courses within the last five years. It is worth noting that half of this cohort (recent graduates) belonged to the senior academic ranks, and three had been involved in dental education for more than 20 years. Conversely, almost half (43.3%) of the respondents had not engaged in formal education for over a decade, while one-sixth, including all the professorial staff, had not dipped their toes in the educational pond for more than 20 years ($p<0.001$).

This study indicates that Irish dental school faculty members have a wealth of clinical experience. Indeed, the vast majority (77%) have at least a decade of clinical experience behind them while almost half (47.4%) of the respondents have been actively involved in the provision of dental treatment for over 20 years. Many are also experienced teachers, with 54% having more than ten years' teaching service. Not surprisingly, older and more senior staff tended to have more clinical and teaching experience ($p<0.001$). However, the bulk of clinical teaching is undertaken by part-time clinical staff, more than half (54%) of whom have less than five years' teaching experience.

A review of the contractual agreements and faculty duties once again confirmed the major role played by the part-time clinical staff in dental education, as they comprised the largest single group in the dental faculty (48%), followed by lecturers (17%), consultants/senior lecturers (17%) and professorial staff (10.8%), as outlined in **Table 2**.

Livingstone⁷ noted that "obtaining a promotion to a higher paying academic rank requires time and effort ... and does not provide positive recruiting material when trying to induce a colleague to enter dental education". Indeed, since the average age of full professor was 59 years, Livingstone⁷ declared that "even with an optimal working environment, asking potential faculty to exhibit patience regarding this delayed compensation for their talents is unrealistic". The age profile of the professorial ranks in this study was quite similar, as all were over 50 years of age and two were over 60. Thus, Irish dental school faculties appear to be largely comprised of

part-time staff members in the lower academic ranks. As fewer than half (45%) of the respondents were full-time faculty employees, this suggests that, while many dentists are interested in contributing to dental education and enjoy the intellectual stimulation of the dental school environment, they do not consider full-time faculty employment a viable financial option. Indeed, international studies suggest that graduates have minimal interest in entering dental academia⁷ Only 16% of endodontic residents said they would be willing to devote more than 1.5 days per week to dental education.¹¹ This situation may also lead to a certain degree of isolation as reports have suggested that part-time staff may not be "accepted totally as a real teacher".¹²

The study also explored the various duties undertaken by the faculty members. While clinical teaching was undertaken chiefly by the part-time clinical staff, as outlined above, most (87%) of the staff were involved in clinical teaching to some degree. Lectures were delivered almost exclusively by the full-time senior academics ($p < 0.001$), while two-thirds of those involved in tutorial delivery and laboratory teaching were in tenured positions with a rank of lecturer or above; most (83%) of them also had at least 15 years' clinical experience ($p < 0.05$). On the other hand, curriculum development was largely the remit of the relatively small number of full-time senior academics, with consultants having the greatest input (79%), while relatively few lecturers (36%) and part-time clinical staff (20.7%) were involved in the decision making process.

This study also examined the degree of satisfaction derived from various faculty duties. The feelings engendered by the various teaching formats were surprisingly uniform. Formal lectures were almost universally unpopular, staff considering this format sterile and daunting, with little opportunity for discussion and feedback. The vast majority (over 90%) prefer small group teaching sessions (clinic, lab or seminar based) to formal lectures. While faculty members enjoy clinical teaching, 65% listing it as their first preference, many find the conflict between the best interests of students and patients stressful and even "potentially dangerous". The tension between the learning needs of the student and the duty to prevent harm to the patient was also noted by Fugill.¹³ Similar concerns have been raised by medical educators.¹⁴ However, it must be acknowledged that dental education is unique in that irreversible operative procedures are routinely performed on members of the general public, including children and medically compromised individuals, by undergraduate students. This survey suggests that the inherent stress of this situation is exacerbated, on occasion, by inappropriate student numbers, time constraints and inadequate working conditions.

Conclusions

This report provides a benchmark on the current profile of Irish dental school faculty members. It reflects on the heavily skewed age groups of our current dental educators and the impending retirement of many senior academics. It suggests that a collective effort should be made by the dental education system to entice graduates to consider a career in dental education. Steps must also

be taken to provide adequate resources to address the needs of existing faculty as they struggle to provide a top class dental education in these challenging times.

The modern vision of dental education requires motivated, adaptable teachers, capable of delivering consistently high quality teaching in a constantly changing environment. Frank Rhodes¹⁵ stated that: "We need our best scholars to be our teachers, and we need them to give the same creative energy to teaching as they do to scholarship. We need to identify, support and reward those who teach superbly". Failure to do so may place the future of dental education as a whole in a precarious situation.

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