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ORIGINAL RESEARCH

Contemporary Issues in Clinical Dental Teaching

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ABSTRACT

Aim: This research project sought to explore the issue of what constitutes effective clinical teaching in the minds of both students and teachers.

Background: As stakeholders of the dental clinical setting, teachers and students have valuable practical insights to share with the academic and professional community as to what constitutes effective dental teaching.

Case description: An explorative qualitative study of dental teachers' and students' perceptions of clinical teaching was carried out at the Faculty of Dentistry of Sydney University. Thirty-one clinical teachers and 12 students participated in this case study through an online questionnaire survey and a focus group, respectively. Responses were categorized in three major clusters, namely, instructional, curricular or organizational.

Conclusion: The findings reveal that both groups hold similar opinions on what constitutes effective clinical instruction including a shared passion for learning and teaching, being clear and organized, demonstrating clinical competencies as well as engaging in professional self-reflection. Most of the issues fell into the instructional cluster where establishing a positive relationship with students including providing constructive feedback at the clinical session came up as key factors contributing to the student experience.

Clinical significance: There is a demand from both students and teachers to standardize clinical procedures and protocols as well as having a greater synchronization in time and content between lectures and clinical work.

Keywords: Cohort study, Dental, Clinical instruction, Teaching and learning, Curriculum.

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BACKGROUND

Effective clinical teaching is a topic that dominates the day-to-day work of dental health faculties particularly from a quality assurance perspective and for overall curricular effectiveness purposes. The dental teaching clinic is the space where its three performing participants, namely, the teacher, the patient and the student interact not only for health purposes but also for training future dentists. Clinical teaching is vital in contemporary dentistry education because this provides the nexus between theory and practice through learning by doing. It also sets an environment where communication between student and teacher is closer and therefore the potential to increase motivation and learning is very relevant.

Above all, the clinical setting provides the scenery where professional skills are modelled and developed on a mentoring basis. It is also the place where beginners immerse themselves in the culture, competencies and ethics of the profession. One might say that the clinical setting is also the place where the transfer of clinical skills and patient care has been passed from the experienced and knowledgeable practitioner to the new and formative 'student' practitioner. For these reasons, it is important to evaluate students' and teachers' views on what constitutes effective clinical teaching.

The purpose of this study was to explore dentistry students' and teachers' perceptions of quality teaching in three contemporary educational domains, namely, instructional, curricular and organizational.

Literature Review

The study of dental students' and clinical teachers' perceptions on their educational environment has become prominent in the last decade.[1,2] Students and clinical teachers—due to the interaction with a variety of forces and variables within the clinical setting—can provide vital information and data characterizing the instructional scenery and hence enhancing the quality of student experience.

Various studies have been carried out to characterize what quality teaching in dental education is about including setting professional standards that can be used as references

for good practice.[3] The research described below reveals a diversity of instruments and variables used to explore dental students' perception of effective clinical dental teaching. Such assortment makes it difficult to follow specific traits to raise conclusions accordingly. However, it is apparent from the literature discussed below that there is a trend to discuss both the personal qualities of effective teachers and clinical supervisors as well core competencies in line with similar studies conducted across the other health professions.[4-7]

Litzelman, Stratos, Marriott and Skeff[8] conducted a study among 1,581 medical students who had previously evaluated 179 clinical teachers through questionnaire data. The statistical validation of the questionnaire used in the study yielded seven categories revealing distinct indicators of quality clinical teaching. These seven categories were: establishing a positive learning climate, control of the teaching session, communicating goals, promoting understanding and retention, refining techniques for evaluating learning objectives, teachers' feedback for further improvement and promoting self-directed learning. A study using the same instrument, the Stanford Faculty Development Program Clinical Teaching questionnaire, was conducted by McGrath, Wai Kit Yeung, Comfort and McMillan[9] involving 148 dental students.

A qualitative study involving 175 dental and dental hygiene undergraduate students examined their reasons for nominating their teachers to teaching excellence awards. Schonwetter, Lavigne, Mazurat and Nazarko[10] classified student responses into seven categories of effective teaching and by classroom and clinic setting. These categories included: individual rapport, organization, enthusiasm, learning group interaction, examinations and assignments, and content breadth. At the classroom setting organization and rapport were the most valued attributes whereas at the clinic setting rapport was the most favored quality.

Fugill[11] using a combination of focus group interviews and questionnaire surveys found that dentistry students value having quality feedback from their educators, constant demonstrations of clinical procedures, the integration of theoretical and practical knowledge as well as supporting learning styles leading to student autonomy and self-assessment.

In responding to a questionnaire study, 619 dental students identified 'breadth of interest' and 'meaningful experience' as more favorable attributes in their course experience, according to a study carried out by Henzi, Davis, Jasinevicius and Hendricson.[12] The scale 'breadth of interest' items referred to 'the faculty's ability to address areas of interest outside the field of dentistry'. In turn, the 'meaningful experience' scale items stood for 'the degree to which structured learning activities were seen as relevant of the practice of dentistry and individual items addressed the relationship between basic science and clinical experience'.

Dental students' perceptions of their teachers through focus groups were examined by Sweet, Wilson and Pugsley.[13] Students were able to articulate a variety of characteristics that makes clinical teaching special for their learning such as the provision of opportunities where they learn through varied cases under professional guidance. They also valued the learning by doing, developing their psychomotor skills and working with other students. Students also appreciate the debriefing component of the clinical session where they could discuss techniques, procedures or alternative ideas.

Gerzina, McLean and Fairley[14] compared perceptions of students and teachers on dental clinical teaching through questionnaire items previously developed from focus groups. Significant statistical differences were found on the issue of educational theory applied in dental clinical teaching. Similarly, statistically differences were found in the appreciation of evidence-based practice as a major clinical dental skill. However, no differences between the two groups were seen on the theme of teacher/student relationship meaning a common agreement on a variety items supporting emphatic guidance, providing strong clear objectives, high level of interactivity, role-modeling, provisions for opportunities for independent learning, discussion of alternative protocols and procedures as well as feedback after the clinical session.

A qualitative study exploring the opinions of 300 students and professionals on the characteristics of effective classroom teachers was carried out by Jahangiri and Mucciolo.[15] While students favored content design, organization and development, dentists and physicians valued more speaker self-confidence and expertize in delivering information. The study also showed that both groups highly appreciate the elements of expertize in delivering information and speaking style as teaching quality characteristics.

A major limitation of the studies reviewed above is the lack of the curriculum and logistics elements that also explain the quality of the student experience. Ignoring the rich interactions among instruction, curriculum and logistics fails to recognize the richness and complexity of the dental educational environment. Certainly, teaching effectiveness takes place along with other situated variables situating learning within a socio/cultural context.[16] Dental academics, as any other educators, are restricted by syllabus

philosophies, content and educational resources, as well as by logistics issues associated with teaching at health facilities.

In general, the above studies indicate that both groups favor a clinical instruction where the relationship between students and clinical teachers is amicable and developed within a mentoring approach. It also calls for engaging enthusiastically in the delivery of the subject-matter including discussion of protocols and demonstration of procedures before, during and after the clinical session. Interactivity during those sessions is perceived as crucial. Feedback is seen as a very important contributor to professional learning as well as having evaluation strategies that rely on meaningful self-reflection. Working in groups is also a well-appreciated approach since students have the opportunity to exchange discipline insights as their learning progresses. Finally, clinical skill competence is a factor that came strongly in the above studies as well as the need for having clear instructional objectives before any learning session commences.

The Context of the Study

The Faculty of Dentistry at Sydney University, Australia, is the oldest dental school in the country having educated dental practitioners for over a century. The Faculty of Dentistry of the University of Sydney, Australia, offers since 2001 the Bachelor of Dentistry (BDent) program with a focus on integrated or multidisciplinary delivery, problem-based learning component, self-directed learning and evidence-based dentistry.[17] Since then several specified undertakings to evaluate the curriculum have been made.[18,19] There are nearly 330 students enrolled in the BDent program. This is a graduate entry course where all students hold previous bachelor degrees or higher degrees. The average age of a BDent student is 26 years. Since, this survey was undertaken a new course is now replacing BDent in 2012. This is Doctor of Dental Medicine and is classified as a postgraduate degree. The BDent course will continue until December 2014.

Teaching takes place mostly in two teaching hospitals in partnership with the public health sector. A large proportion of clinical teaching staff in prequalification programs are often practising clinicians who teach part-time. The ratio in the clinic is one teaching staff to eight students. Due to their practical experience they bring a wide-ranging amount of health care experience and expertize engaging students directly in the practice of the profession. Most of the part-time staff is clinicians with almost no pedagogical background. This lack of pedagogical expertise also includes teaching hospital staff. Their teaching is on patients who have clinical demands which sometimes are hard to fit in the teaching environment. While there is a diversity of experience that these teachers bring to the campus there is also a need in the interests of providing a uniform and coherent learning experience for students to have a sound pedagogical training.

Case Description

This research project sought to explore the issue of what constitutes effective contemporary clinical teaching. It consisted of both a teachers' and a students' study. The former made use of an online questionnaire survey while the latter involved a focus group interview.

The data collection for the teachers study was carried out through an online questionnaire survey addressed to clinical teachers. For the students study a focus group interview was conducted involving BDent students. Participants in both studies were assured that their responses would be kept anonymous and confidential. Participation was voluntary for both teachers and students.

The reason in using an online questionnaire for teachers and a focus group interview for students laid on the need to collect information from the teaching cohort which is mostly part-time. Most of them work as dental practitioners in private practice or in the public health service clinics teaching in different sessions for a few hours on different days of the week and spread in two different campuses. Given those circumstances the decision was made to facilitate greater participation through the online survey. The student focus group was adopted to organize the discussion based on the issues previously raised by the clinical teachers. It was thought that beginning the enquiry with teachers would provide a more pedagogy-oriented framework to structure the student focus group interview to follow.

Thirty-one clinical teachers, sometimes referred to as tutors by students, representing 55% of the total clinical workforce at the BDent program participated in an online voluntary questionnaire survey. All clinical teaching staff was invited to the study. The invitation to participate was delivered by email providing a link to a dedicated online questionnaire. The majority of the clinical workforce at the Faculty of Dentistry is comprised of clinical teachers teaching in the senior years integrated disciplinary patient clinics. Most of the clinical workforce has had more than 10 years in clinical practice.

The questionnaire consisted of seven open-ended questions intended to encourage respondents to elaborate on their responses to gain greater depth of information and qualitative commentary. Questions were adapted from the

questionnaire themes originally developed by McGrath, Comfort, Luo and Boltelho[20] being very relevant for examining factors leading to effective clinical dental teaching along seven categories: learning climate, control of sessions, communication of goals, promotion of understanding and retention, evaluation and feedback. The open-ended questions are outlined below and were previously validated with three senior dental academic staff who did not participate in the study:

1. What do you regard as the most important role of a clinical teacher?
2. What do you find most challenging in your role as a clinical teacher?
3. What do you regard as the most important teaching skills and attitudes that are particularly critical in support of student learning in a clinical setting?
4. What specific teaching skills would you be most interested in improving?
5. What would help you do a more effective job as a clinical teacher?
6. Thinking back on your student days and the teacher who had the greatest impact on your career, what did they do that made a difference in your learning?
7. What advice regarding teaching would you offer to new clinical staff joining the faculty this year?

In addition, an invitation was made to all students in the BDent program from all year levels to participate in a focus group interview to discuss the issue of quality clinical teaching. The invitation to participate was delivered via email. The student sample consisted of 12 students, seven females and five males, representing the views of students that had attended the 4 years of the BDent course. As such, although a 4% of the total student population, the sample ensured a comprehensive representation of the population in terms of gender and year of study.

Hence, a semistructured focus group with student was conducted since this type of methodology permitted the examination of students' perceptions on a broad range of issues as raised by clinical teachers in the online questionnaire component of the study. The interview questions intended to further explore issues concerning the instructional, organizational, and curricular factors affecting the delivery of clinical education at the Faculty of Dentistry. Those questions, shown below, were also drawn from previous studies as discussed in the literature review.

1. What do you consider the most important qualities for a clinical teacher to demonstrate?
2. In terms of their role in the clinic, what specific things do you expect from clinical teachers? What do you most want to gain from them?
3. What specific feedback would you offer your clinical teachers to help them be more effective in their role?
4. What is an example of something a clinical teacher did that had a particularly positive impact on you?

The instructional, organizational and curricular issues referred to in the study represented initial categories and subcategories for examining participants' responses. These issues constituted preliminary categories that guided the analysis and were meant to be refined as respondents shared their insights about clinical dental education from a contemporary perspective of teaching and learning.

In order to facilitate the analysis of participants responses in both the teachers' and students' component of the study responses were coded using initially the instructional, organizational and curricular nature of each remark. This three-dimensional methodological design is commonly used in educational research to facilitate the organization of coded educational perceptions. [21] Instructional issues were those identified as associated with teaching and learning practices enacted within the clinical environment. Curricular issues referred to concerns related to the way the dentistry curriculum was structured and delivered. In turn, organizational issues were those connected with the logistics needed to materialize the curriculum within the clinical dental environment.

The themes were subsequently split up into emerging smaller subthemes representing single meaningful concepts. Likewise, each subtheme was further reduced taking into account common ideas underlying the data. This process was repeated until no further comparison was possible due to saturation.[22] Finally, commonalities and differences between teachers' and students' perceptions were explored at the level of these major domains.

DISCUSSION

In this section results are discussed in two parts. The first part will deal with the analysis of clinical teachers' responses and the second part will analyze students' responses. The emerging issues are summarized in Table 1.

Part I: Discussion of Clinical Teachers' Responses

Participants were able to articulate a broad range of educational roles they would like to play as clinical teachers in various themes. Seven themes were, after the qualitative analysis, further grouped into three broader clusters of instructional, curricular and organization issues as discussed before. All verbatim quotes in this section belong to the respondents. Due to current university ethics clearance restrictions respondents' names cannot be identified. As it

Table 1: Contemporary instructional, curricular and organizational issues as raised by teachers and students

Participants	*Instructional*	*Curricular*	*Organizational*
Teachers	The affective domain Dentistry skill development feedback Coping with individualized instruction Generic professional capabilities	The dilemma between theory and practice Clinical consistency	Logistics demands
Students	Effective teaching skills The value of individualized approaches Session feedback Quality of feedback	Consistency in treatment plans Theory *vs* practice	Clinical standardization

is customary in qualitative research, participants' comments have been used to structurally generalize the sample collective meaning.

Instructional issues: This section discusses five instruction related issues which comprehend affective considerations in delivering the curriculum, the development of dentistry skills, providing constructive feedback, consideration for individualized instruction and the fostering of generic professional capabilities.

First of all, responses appear to address both affective and instructional attributes needed in teachers to enhance the student experience. Among those are the provision of 'individual guidance tailored for each student, patient and situation,' identifying 'areas of difficulty for individual students so that it can be dealt with in the session' and teaching 'the course as laid out in documents provided'. It was suggested that a number of personal qualities should accompany such an approach such as being enthusiastic, knowledgeable and positive as well as showing 'understanding, knowledge, compassion, patience'. Other participants saw his/her role as to 'supervise, advise, help, support, explain and encourage' and 'in a stress free and inspiring manner'.

As per the most valued teaching skills and attitudes that are particularly critical to support student learning in a clinical setting; teachers believed that it is important to stay nonjudgmental, encouraging and to put students at ease, while displaying 'knowledge, enthusiasm, caring attitude, listening skills and of course ethics and discipline' coupled with 'extreme calmness and patience, courtesy and respect for the students and a real desire for them to succeed in their skill development'. Other praiseworthy attitudes include:

- An appreciation that people learn at different rates and that some people need more practice than others to achieve a skill
- Recognizing that your way is not the only way
- Being able to show them how to do things without taking away their confidence in their own ability to carry out the task, and
- Never humiliate them.

As with the development of clinical dentistry skills responses were concentrated on two instructional directions. On one hand, students are to exercise their own problem solving skills as they go about the whole patient treatment cycle. Some of these comments included the instructor's ability to:

- Ensure 'students learn how to solve problems in a systematic manner and ensuring they do this in a competent manner'
- 'Be able to guide the students into the right thought processes to enable them to assess, diagnose and treatment plan well, whether they are approaching a complete treatment plan or a limited plan to deal with an 'emergency' situation'
- Guide 'a student to have a broader picture of a clinical case while helping them to coordinate detailed clinical procedures'
- 'Instil a clear organized and methodical approach to both diagnosing and the actual practice of dentistry', and
- 'Gathering different treatment plans and discussing and offering the most 'practical' treatment for the patient'.

On the another hand, while demonstrating and modeling clinical procedures at the chairside, clinical teachers must

- 'Carefully guide students through procedures making sure they do as much as they are capable of'
- Be 'able to demonstrate and carry out various clinical tasks with ease'
- 'Provide techniques and tips to enable easier execution of procedures, and to correct inaccurate technique to enable standardization of practitioner techniques'
- Be 'able to discuss openly about success and failure in dentistry,' and
- 'Breaking the tasks into easy steps'.

Appropriate and effective communication to students about their learning experiences must take place in all circumstances including in regard to treatment plans. As a clinical teacher adequately summarized:

> 'Clear, precise direction instructions. Discussion of all options available for treatment even though only one will be followed. Discuss fully the treatment plan. Discuss how the actual treatment will be performed so

it is well thought out before anything is done. Trying to encourage clear and organized thought processes and practice. Firmness when needed but encouragement and guidance I believe is preferable especially with these older students. To be approachable, to be ready to help and answer questions and so increase knowledge and hopefully confidence.'

They strive in their balancing role of looking after the patient well-being and the student learning requirements, when sometimes problems are encountered. Some clinical teachers advocate 'giving feedback in an appropriate manner so that patient is safe (and) receives excellent treatment and student learns'. This is true particularly to those students 'who may feel negative or upset from certain clinical situation and how to make them feel confident dealing with any medical problem'. As a participant said 'the most challenging aspect in my role is to engender enthusiasm in all students'.

As with individualized instruction, clinical teachers mentioned issues such as 'coming down to their students' level of understanding and coping with diversity within one cohort'. They report struggling to 'be able to devote sufficient time to each student during a clinical session' and well as dealing with the 'variation in standard between students'. Some of their main concerns are about:

- Student's poor time management, wants to do everything by themselves but at the same time unable to apply knowledge into practice
- If he/she (student) deviates from the lecture notes or from what the specialist says
- Students take too long to come up with a correct, good diagnosis which then leave them little time to provide treatment
- Students who are poorly prepared … who try to play the system and cut corners, and
- Often a lack of preclinical knowledge and clinical language on the part of the student.

Respondents also saw their role as helping students to reach a number of generic learning attributes such as becoming competent clinicians, proficient in patient care management and adeptly articulating theory and practice. Among the main learning goals perceived by teachers were to 'make sure that the students is clinically competent', that 'students learn while treating patients' and that 'the treatment produced is of the highest standard'. Clinical teachers also want that students 'do not put themselves at any risk', ensuring that 'students have a good knowledge of the fundamentals in treating the patient as a whole'. This is seen as a balancing act required to 'facilitate student learning while maintaining optimal patient care'.

Clinical teachers would like to see themselves as professional exemplars in front of their students as 'an exceptional role model of professional and ethical clinical practice,' demonstrating 'professional behavior upholding clinical and professional standards' and providing 'role modeling professionalism, high standard of skills, compassion and empathy for both patients and students'. This also entails acquiring the necessary knowledge and skills to impart them in a way that students 'can accept and work with for their own learning' where teachers 'engender enthusiasm for further learning beyond the parameters of the course'. More importantly, instructors themselves are to 'demonstrate a commitment to continuous professional development' in order to 'transfer an up-to-date knowledge of clinical procedures involved in the assessment, planning and treatment of the patient in the discipline for the training purpose'.

Curricular issues: There were two issues associated with the content and delivery of the curriculum including theory *vs* practice and clinical consistency.

As with the dilemma between theory and practice there is also a concern for helping students to navigate in the space between the knowledge learned in lectures and the practice enacted at the clinics. Teachers therefore see their roles as enabling students 'to apply their theoretical knowledge and skills in actual patient care in the clinic', 'in utilizing this knowledge in the practice setting' and connecting 'the academic side of dentistry with the realities of the clinical world'.

The dilemma between theoretical and applied knowledge appears to be central to the clinical work. By being unaware of what lecturers teach in class, some clinical teachers find themselves disconnected of this important body of student knowledge, not knowing 'what has been taught, but wanting students to be able to explain why they make a certain treatment choice based on scientific evidence'.

Misgivings seem also to arise from the difference of opinions among teachers on patient treatment, that is, clinical consistency. These opinions sometimes are contradictory confusing students on the adequacy and validity of specific clinical procedures. For example, there is 'discrepancy or different approaches by various educators (that) can be very disheartening and confusing for students', as well as 'conflicting treatment plans', 'dealing with other teacher's misinformation,' or 'continuing treatment started/ authorized by someone else, and making it work, even though you may never have done that for your patient'.

Organizational issues: Teachers report to be pressurized by various logistics demands. Time availability, hospital support or large number of students in a clinic, can play a

role in maintaining adequate health service quality standards.

Part II: Discussion of Students' Responses

The students also expressed clear ideas regarding what they believe constitutes effective clinical teaching and provided examples of positive experiences with clinical teachers. In their responses to the first of the four questions in the focus group interview, what stands out is the congruence between what the students identified and the qualities mentioned by clinical teachers in the questionnaire component of the study. Both teachers and students agree that enthusiasm, positivity, consistency, respect and encouragement are important personal qualities that help facilitate learning. Students appreciate teachers who encourage self-reflection as well as those who make a concerted effort to establish rapport with them and are approachable.

Like in the teachers component of the study issues were categorized as instructional, curricular or organizational.

Instructional issues: The qualitative analysis of students' responses in regard to instructional issues yielded four themes. The four themes dealt with teaching skills appreciated by students, the importance of individualized instruction as well as feedback at clinical sessions including its quality.

A number of pedagogical skills were underlined in the study. Interviewees want clinical teachers to explain concepts in more than one way even with analogies or any other strategy. Teachers' ability to clearly communicate and break down elements of a particular skill was also seen as a very important teaching capability, that is,

> … '[b]eing able to verbalize what they are doing rather than just going through the motion which they have had drilled into them for so long because I feel that's – again that comes down to both communication and consistency'.

Students appear to highly regard teachers encouraging learning by trial and error and willing to accept that they do not know everything. Such explicit fallible disposition in the clinic makes students feel that making mistakes should not be the cause of embarrassment. As a participant said: 'Being humble enough to admit it (a mistake) and willing to make amends'.

As with individualized approaches, students appreciate clinical teachers' ability to realize that each one is at a different level of skill development which needs time to mature and bring to fruition, that is, 'an understanding of what comes with time, what comes with practice, what comes naturally…' because 'you are watching someone who's had 10, 15 years' experience and I can not do that'.

Helpfulness is also a personal attribute greatly appreciated by students: '… a good clinical tutor is someone that gives you attention when you need it and particularly when you are struggling with things' … 'it was like come and help you and they did come back and remember what your weak points were'. A clinical teacher providing individualized attention is valued because 'it did not feel like a one-size fits all sort of tutelage'.

The issue of feedback at the beginning, during and at the end of a clinical session was brought up several times during the focus group. In particular, having feedback on patients on a treatment program at the beginning of each intervention is particularly relevant to clinical learning because each clinical teacher is different and some patients have complex medication issues.

During the clinical session, students are seeking for active feedback where teachers are looking over their shoulders 'like hawks watching exactly what we did … and saying oh, you are doing that right …' rather than just over sighting the intervention after given detailed instructions or stepping in 'and (clinical teachers) do the work for you and you are supposed to observe it'. Interactivity in the clinical session is well appreciated where both teacher and student engage in a productive learning dialog. Students value 'someone who was willing to show you as well as tell you … but also listens to you'.

The quality of professional communication at the chairside was also raised highlighting student awareness of his or her self-esteem 'so ... you do not lose face in front of people' which at ill-managed situation 'makes you look really, really incompetent and that also affects your confidence...' A participant recommended that when a student is doing something which the teacher considers clinically unsafe to take him/her aside and 'say that is not how I want you to do it. I will do this and then you come back later' rather than being abrupt in front of the patient.

At the end of the session, students appreciate feedback that is more qualitative rather than just a grade like the clinical teacher who

> 'explained what all the different things were and he did say for you to get to this next level this is what you did require and this is what you should have done and the reason why I am putting you here is because you did this, this and this right but next time, you know, you will be … to do this, this and this and so …'

Students also highlighted the need for clinical teachers to improve their skills in giving constructive feedback. This comment is a close match to what the clinical teachers

reported in the open-ended questionnaire as the skills they wanted to learn more about. Students commented that they experience a broad range of approaches in which some clinical teachers only offer criticism while others avoid saying anything critical—constructive or otherwise—about a student's performance in the clinic.

Some clinical teachers are perceived by students as being very effective in providing group feedback where names are not mentioned. This is perceived as a positive learning experience because

> … 'you give your personal feedback and the tutor gives feedback and it's like the best session because you have learnt from everyone's mistake … and we all make similar mistakes … you do not get like ridiculed by the whole class but you still learn from your mistakes and it's good … (the clinical tutor) does it is constructively, it is not meant to make you feel bad'.

The interviewees mentioned that they liked this balanced strategy as they felt their opinions were valued. More importantly, it let them appreciate other people's evaluations and become themselves critical of their work while also gaining from the clinical teacher's critical perspective. In general, the literature asserts that group and self-reflective practice are widely regarded as an essential element in fostering student critical thinking.[23-25]

Curricular issues: Similar to teachers' responses, students' curricular concerns focused on themes pertaining to consistency in treatment plans and the value of theory and practice.

In regards to consistency in treatment plans, students also revealed their irritation when a clinical teacher changes a plan that is already being signed off:

> … 'you come in expecting to do like three fillings and then (a clinical teacher) comes in and (says) that is not big enough for a (cavity); let's change it even though some other dentist signed it off. I know they can not let you do something that they do not think is right and it's hard for all these different dentists who trained everywhere ... as soon as the patient comes in and they (clinical tutors) have a look, they were like yeah, I do not agree with this and they go change like the treatment plan. That is annoying'.

Finally, interviewees also appreciate the need to link theory to practice through a more efficient synchronization between lectures and clinical work. As some students said:

> ... 'in certain subjects like (tooth) conservation where the lecture's tying in very well to the clinic you know the reason why you are doing things and it is obvious to you–I feel I do a much better job when I understand the background, it is reinforcing your learning experiences' ...
>
> ... 'we have these correlating lectures with the clinical sessions, sometimes you will go down to the clinic and regardless of what you have just been taught in a lecture ... (the clinical tutor recommends) that is the way you approach it, like taught the practical side of it whereas you have just been taught something completely different'.

Organizational issues: In an appeal for clinical standardization and in order to avoid the above problems, most students strongly suggested a handbook 'that really sets out all of the procedures, how to do them so if something like a clinic manual or a handbook ... which you could have it for first and second year, that says this is probing, these are all the different elements that we have to learn, the scaling and the sealing and all that sort of stuff, all those basic clinical procedures that we will learn in first and second year ...' and would outline 'what was going to happen and what procedures are being taught and in what way and in what order'.

CONCLUSION

This study characterized teachers' and students' expectations of dental teaching in three major educational domains, namely, instructional, curricular and organizational. Such a contemporary framework set a comprehensive scene where the instruction variable was studied in relation to other socialcultural constructs, such as the curriculum and health logistics synergies.[15]

At the data analysis stage, teachers' perceptions were categorized in eight themes where views were grouped as to how teaching and learning in a clinical dental setting should ideally occur. Similarly, students' perceptions were grouped into seven themes expressing their various ideal expectations of quality teaching. The variety of themes revealed the complexity and richness of the dental educational environment.[8,10,15] Such a contemporary classification of teachers and students responses in three major domains facilitated the exploration of both groups' perceptions as to what dental educational practice should be about.

Most of the themes fell into the instructional domain with similar comments from both groups in regard to teachers' personal attributes. These include showing helpfulness and patience and enacting effective teaching skills in the process of developing dentistry skills taking into account that no students are at the same cognitive or

psychomotor level. In the responses, there was also close alignment between what students and teachers suggest in regards to giving constructive, meaningful and encouraging feedback before, during and at the end of the clinical session. However, it is evident from students' comments that such ideal teaching expectations do not necessarily translate into practice. Such a dissonance requires further research through participant observation methods with obvious benefits for professional development.

A common curricular concern was the issue of content delivery in lectures and clinical tutorials although comments took different angles. Students feel the need to align clinical teaching more closely to what is being taught in their regular lectures. They also request more standardized procedures that minimize differences in teachers' diagnosis and treatment plans. In turn teachers, demand better access to lecture content to make sure that the inconsistencies with their clinical teaching do not take place.

A key challenge for clinical teachers appears to be finding the balance between reinforcing high standards of patient care while at the same time supporting the development of competence and confidence in students. Students seem to be apprehensive and nervous of teachers' reactions when things go wrong particularly at the chairside.

Organizational issues highlighted by students include the necessity for having a standardized clinical manual. Teachers' concerns deal more with problems related to hospital logistic support, lack of teachers' time and large numbers of students per tutor being supervised in the clinic.

A limitation of the study resides in the self-reported nature of teaching practices which cannot be immediately verified. Therefore, it is recommended that further research should be conducted to compare and supplement this information through observational methods. Also, the limited size of the student sample as compared to the total student cohort does not allow for broad generalizations. Having the same data collection design would have allowed a better matching comparison in responses between both groups, however, teachers' time complexities proved this logistically unfeasible. Hence, two qualitative-oriented approaches were used: an online open-ended survey for teachers and a focus group interview for students bringing together the benefits of mixed mode research.[22]

CLINICAL SIGNIFICANCE

Many implications for enhancing dental course delivery, curriculum design and professional development can be drawn from the above findings. Throughout most of the instructional themes, quality of communication between student and teacher stood out as a prominent catalyst to effective teaching. Clinical teachers' personal qualities in delivering the curriculum appear to play a significant role in not only establishing rapport with students but also in facilitating learning—a finding that is supported in the broader research literature particularly by Gerzina, McLean and Fairley.[14]

The quality of the relationship that clinical teachers establish with students was perceived clearly at the core of effective clinical teaching, as corroborated in other studies.[26,27] A clinical teacher's recognition of this offers a positive foundation upon which to build further instructional skills enhancing the student experience. What Bloom[28] refers to as the 'affective domain' of learning which includes attitudes, emotions and self-concept is an integral part of the personal and professional development of students that clinic-based learning is particularly well situated to address. Students look up to many clinical teachers as role models since most will be entering private or public clinical practice following graduation rather than pursuing a career in academic dentistry.

Furthermore, students believe they are able to discern those clinical teachers who have a genuine interest in their learning and who want to develop a supportive relationship. We know from extensive research cited above that this can be an important motivator for student learning. The importance of this finding is that some clinical teachers see their role as primarily supervisory and shape their relationship with students accordingly while underemphasizing a more supportive mentoring role. While this may be true for only some of the clinical teachers it is nevertheless an important educational issue to continue to address especially with new clinical teachers.

In general, there was also a high degree of congruence between what students regard as key qualities of effective clinical teachers and what these teachers also see as key attributes. While there is a difference between knowing what is wanted and/or expected, and being able to consistently manifest those preferred qualities, it is encouraging to note the close agreement between students' and clinical teachers' perceptions. We know from research on adult learning that in any group of students there is a broad range of preferred learning styles and this fact challenges even the most experienced teachers. So while there is no one best method or approach that will be effective for all students, there are personal qualities and attitudinal approaches that do make a difference as commented on above. It is important therefore not only the mastery of the dental know-what and know-how but also the know-be.

Understandably, students seem confused when two teaching staffs advise them on two different directions.

There is a therefore need to put a protocol in place as to what to do when a teacher does not agree with a treatment plan previously approved by another faculty staff. Complementarily, there is a call for having a handbook for clinical teaching staff to advise them the content and procedures delivered in the lecture hall. Similarly, calibration processes are required so that there is consistency across instructors' personal modus operandi. These are instructional and curricular issues that require further research in the context of the uniqueness of each dental school.

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REFERENCES

1. Handal B, Groenlund C, Gerzina T. Academic perceptions amongst educators towards eLearning tools in dental education. Int Dent J 2011 Apr;61(2):70-75.
2. Handal B, Groenlund C, Gerzina T. Dentistry students' perceptions of learning management systems. Eur J Dent Educ 2010 Feb;14(1):50-54.
3. Bullock A, Firmstone J. Guidelines for Dental Education: a framework for developing standards for educators of the dental team. University of Birmingham: Centre for Research in Medical and Dental Education; 2008. Available from: http://www.copdend.org/data/files/Downloads/Standards%20for%20Dental%20Educators%20Final%20Publication.pdf.
4. Chambers F, Geissberger M, Leknus C. Association amongst factors thought to be important by instructors in dental education and perceived effectiveness of these instructors by students. Eur J Dent Educ 2004 Nov;8(4):147-151.
5. Hand J. Identification of competencies for effective dental faculty. J Dent Educ 2006 Sep;70(9):937-947.
6. Kilminster SM, Jolly BC. Effective supervision in clinical practice settings: a literature review. Med Educ 2000 Oct;34(10):827-840.
7. Sutkin G, Wagner E, Harris I, Schiffer R. What makes a good clinical teacher in medicine? A review of the literature. Acad Med 2008 May;83(5):452-466.
8. Litzelman D, Stratos G, Marriott D, Skeff K. Factorial validation of a widely disseminated educational framework for evaluating clinical teachers. Acad Med 1998 Jun;73(6):688-695.
9. McGrath C, Wai Kit Yeung R, Comfort MB, McMillan AS. Development and evaluation of a questionnaire to evaluate clinical dental teachers. Br Dent J 2005 Jan;198(1):45-48.
10. Schonwetter DJ, Lavigne S, Mazurat R, Nazarko O. Students' perceptions of effective classroom and clinical teaching in dental and dental hygiene education. J Dent Educ 2006 Jun;70(6):624-635.
11. Fugill M. Teaching and learning in dental student clinical practice. Eur J Dent Educ 2005 Aug;9(3):131-136.
12. Henzi D, Davis E, Jasinevicius R, Hendricson W. North American dental students' perspectives about their clinical education. J Dent Educ 2006 Apr;70(4):361-367.
13. Sweet J, Wilson J, Pugsley L. Chairside teaching and the perceptions of dental teachers in the UK. Br Dent J 2008 Nov;205(10):565-569.
14. Gerzina T, McLean T, Fairley J. Dental clinical teaching: perceptions of students and teachers. J Dent Educ 2005 Dec;69(12):1377-1384.
15. Ramsden P. Learning to teach in higher education. 2nd ed. London: Routledge Falmer; 2003.
16. Jahangiri L, Mucciolo TW. Characteristics of effective classroom teachers as identified by students and professional: a qualitative study. J Dent Educ 2008 Apr;72(4):484-493.
17. Klineberg I, Massey W, Thomas M, Cockrell D. A new era of dental education at the University of Sydney, Australia. Aust Dent J 2002 Sep;47(3):194-201.
18. Gerzina TM, Worthington R, Byrne S, McMahon C. Student use and perceptions of different learning aids in a problem-based learning (PBL) dentistry course. J Dent Educ 2003 Jun;(67)6:641-653.
19. Henderson-Smart C, Winning T, Gerzina T, King S, Hyde S. Benchmarking learning and teaching: developing a method. Qual Assur Educ 2006;14(2):143-155.
20. McGrath C, Wai Kit Yeung R, Comfort MB, McMillan AS. Development and evaluation of a questionnaire to evaluate clinical dental teachers (ECDT). Br Dent J 2005;198(1):45-48.
21. Handal B, Herrington T. Mathematics teachers' beliefs and curriculum reform. Math Ed J 2003;15(1):59-69.
22. Cohen L, Manion L, Morrison K. Research methods in education. 7th ed. London: Routledge Publishers; 2011.
23. Behar-Horenstein L, Dolan T, Courts F, Mitchell G. Cultivating critical thinking in the clinical learning environment. J Dent Educ 2000 Aug;64(8):610-615.
24. Branch WT Jr, Paranjape EA. Feedback and reflection: teaching methods for clinical settings. Acad Med 2002 Dec;77(12):1185-1188.
25. Pololi L, Clay MC, Hewson M, Kaplan C, Frankel R. On integrating theories of adult education into a medical school faculty development course. Med Teach 2001 May;23(3):276-283.
26. Herbert, Hannam, Chalmers. Enhancing the training, support and management of sessional teaching staff. Teaching and Educational Development Institute, University of Queensland, 2002;1-8 p.
27. Victoroff K, Hogan S. Students' perceptions of effective learning experiences in dental school: a qualitative study using a critical incident technique. J Dent Educ 2006 Feb;70(2):124-132.
28. Krathwohl, David R; Bloom, Benjamin S; Masia, Bertram B. Taxonomy of educational objectives, the classification of educational goals. Handbook II: affective domain. New York: David McKay Co., Inc., 1973.

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