Using Significant Event Analysis in Dental and Medical Education

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Abstract: As part of a new professional development teaching strand at the University of Otago’s School of Dentistry, final-year dental students were each asked to write a “thought-provoking episode report” (TPER). These TPERs formed the basis for group discussion in a professional development course. This article outlines the main content themes of the reports, comparing them with similar reports written by medical students from the same university. While both sets of reports demonstrate students’ commitment to high standards of care, there were significant differences in the overall themes. Of the fifty-one dental TPERs, the main themes were “difficult” patients, receiving conflicting advice from different clinical tutors, friends as patients, belittlement, and maintenance of professional standards. Key themes from medical students’ TPERs included responding to patient suffering, observing or experiencing belittlement, uncertainty, error and complaints, the role of the undergraduate student, treating family and friends, causing distress in order to learn, and issues with mentoring. Possible interpretations of the similarities and differences in this data include confirmation of the value of personal experience as a basis for student discussion, the necessity for formal programs in professional development, and the presence of a hidden curriculum in dental and medical education.

Design of the Professional Development Courses

Dental Student TPERs

In 2003, a short course in professional development was offered for the first time to final-year dental students at Otago University within the Community Dentistry program. This course included workshops on professional boundaries, self-care, and personal health issues for dentists. Small group tutorials on professional relationships were based on student TPERs and were cotutored by lecturers from the medical school (HW) and the dental school (KA), who were not involved in clinical teaching for these students. The rich data about student experience that emerged from these dental TPERs afforded the opportunity to compare the learning experiences of dental and medical students.

Recent innovations in medical education have included using student experience as a trigger for teaching.1,2 Such stories have variously been called critical incident reports or significant event analyses, stemming from the critical incident technique developed by Flanagan as a research tool to identify factors associated with aircraft safety and pilot error during the World War II.3 Since 1999, medical students attending the clinical schools of Otago University in Wellington and Dunedin have written these stories based on their learning experiences. These stories are now referred to as “thought-provoking episode reports” (TPERs) and are included as part of a teaching module called professional development.4

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groups are used for teaching purposes throughout the final-year course. Three or four TPERs were chosen to represent the main themes of that particular group and were distributed to each student. Initial briefing to each group included the aims of the session (see Table 2), as well as rules about confidentiality and respect for group participants. Most students contributed to discussion, which at times became quite animated.

A standard university course evaluation gave dental students an opportunity to provide anonymous feedback on the professional development course in the form of written responses to both open and closed questions. Students felt they had improved their “understanding of concepts” and “developed a greater sense of responsibility.” Tutors were perceived to be “effective,” with a good balance of student and tutor contribution, including “a non-threatening atmosphere for debate.” Open-ended questions gave rise to comments such as: “Very valuable to find that we are all experiencing similar problems”; “chance to share own opinions”; and “best aspect was TPERs.” There were no negative comments about the course in these open-ended questions.

The fifty-one dental TPERs were analyzed for their main theme and subsidiary themes. Some were considered to have two major themes, giving a total of sixty central issues, shown in Table 3.

Categories were assigned to the most pressing of the issues facing each student, as revealed by their writing. “Difficult” patients, for example, included patients who consistently failed appointments, who requested inappropriate treatment, who unfairly criticized other students, who were angry with the student, and so on. This category is consistent with the “heartsink” patient from general medical practice, who generates feelings of inadequacy and hopelessness on the part of the health professional. We prefer

Table 1. Student guidelines for writing “thought-provoking episode reports” (TPERs)

Choose an incident if you’ve found yourself talking about it to other professionals, your friends, or your partner or even if it is just staying in your mind for a while. The episode does not have to be complex, but must be from within your experience of dental school or elective periods. The following format is not compulsory, being more of a suggested guide. Your report should be less than 1000 words in essay format in two parts:

A. Narrative
This is your story of the event; it should include how the situation went for you, how you interacted with others, and comments on specific details that were relevant to you, including such things as the most important thing for you, your thoughts at the time, the most difficult things to understand or do, how it all felt to you, whether you talked it over with others later, and so on.

B. Analysis
Please clearly identify the main issue(s) underlying this event. (It may help to review your notes on the incident a number of times, jotting down your developing thoughts each time.) Have you had to cope with this situation before? How do you usually debrief yourself from similar situations? Would you cope with the same situation differently now? What have you learnt so far from this incident?

Table 2. Aims of the small group tutorial on professional relationships

By the end of the tutorial, students:
- will be able to identify common professional issues in clinical care, such as the “difficult” patient and problematic issues in teamwork;
- will be able to work collaboratively with colleagues to have productive discussions on issues in practice; and
- will have had experience of written and oral reflection on clinical practice.

Table 3. Major themes in fifty-one dental TPERs

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Difficult” patients</td>
<td>13</td>
</tr>
<tr>
<td>Conflicting advice from different</td>
<td>11</td>
</tr>
<tr>
<td>clinical tutors</td>
<td></td>
</tr>
<tr>
<td>Belittlement</td>
<td>10</td>
</tr>
<tr>
<td>Professional standards/complaints</td>
<td>6</td>
</tr>
<tr>
<td>Treating friends and family</td>
<td>4</td>
</tr>
<tr>
<td>Systems issues</td>
<td>3</td>
</tr>
<tr>
<td>Other teaching issues</td>
<td>2</td>
</tr>
<tr>
<td>Pediatric patient issues</td>
<td>2</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>
the term “difficult,” implying that not all health professionals would find such a patient difficult—the perception being more a reflection of how the professional responds and copes with certain situations.6

The category of “conflicting advice from different clinical tutors” arose when a student saw the same patient on a number of occasions, but was required to modify the treatment plan under the guidance of a different clinical tutor. While assigning tutors for clinics to maintain continuity of teaching could also be labeled as a “systems” issue, that category was reserved for TPERs relating to student frustration in response to problems such as missing clinical records or delays in obtaining radiographs.

Belittlement is the term used to cover students’ writing about their perceptions of being treated unjustly or receiving “unfair” criticism from teaching staff in front of others, including patients. The category “other teaching issues” was used where teaching issues were not related to belittlement, such as inappropriate tutor advice on needle stick injuries. Several students wrote stories about treating friends and/or family members. These TPERs generated considerable debate amongst each group.

The category of “professional standards/complaints” covered TPERs that described students’ perceptions of substandard work performed by previous dentists, students’ observing tutors “making mistakes,” and patients’ transferring to different students for various reasons.

The “miscellaneous” group included a wide range of TPERs, such as patients with complex medical problems, the HIV patient, gossip amongst staff, teamwork on elective (research) studies, choice of dental materials, and students admitting to stress. While several dental students reported being acutely conscious of causing patients pain as part of their dental treatment, this was the main theme in only one dental TPER. In contrast, “causing distress in order to learn” was a more commonly reported issue for medical students.

Medical Student TPERs

TPERs are used slightly differently in the medical school. Students are given the same writing instructions, but instead of group discussion, each student receives written, formative feedback on his or her essay from one of four medical reviewers. The medical TPERs discussed here were assigned to one reviewer (HW), constituting a random selection from the fourth- and fifth-year undergraduate medical students in 2002-03.

The categories were slightly different from the dental TPERs, perhaps reflecting the different educational format, as well as the different learning needs and experiences. Many medical students wrote of their first clinical encounter with patients who were suffering, were dying, or had died. The category of belittlement for medical students included instances where students observed disrespectful doctor interactions with patients, as well as teaching experiences where students felt they had been unfairly criticized. There were a number of students who felt quite apprehensive about asking patients to submit to their history and examination practice. This also led to students discussing their role in medical wards, where some interactions with patients were more for their own learning than for patient benefit. Three students in this selection of TPERs chose the topic of mentoring (part of the current professional development module in the medical school), expressing their reservations about the course. The miscellaneous group included students who expressed opinions about their current levels of stress (see Table 4).

Table 4. Major themes in fifty-three medical TPERs

<table>
<thead>
<tr>
<th>Theme</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responding to patient suffering</td>
<td>15</td>
</tr>
<tr>
<td>Observing or experiencing belittlement</td>
<td>9</td>
</tr>
<tr>
<td>Uncertainty, error, complaints</td>
<td>8</td>
</tr>
<tr>
<td>The role of the undergraduate student</td>
<td>4</td>
</tr>
<tr>
<td>Treating family and friends</td>
<td>4</td>
</tr>
<tr>
<td>Causing distress in order to learn</td>
<td>4</td>
</tr>
<tr>
<td>Mentoring</td>
<td>3</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

Discussion

While “significant events” or “critical incidents” have been used in undergraduate medical teaching for some time, this report is one of the first in the dental literature to outline how student experience can be used fruitfully as a group learning tool. Mofide et al. studied critical incidents from dental students in the United States at the end of their community attachments,7 but their goal was more to “gain insight” into students’ learning experiences, rather than to use the stories as a teaching tool. This differ-
ent orientation was probably reflected in the more abstract categories that emerged (personal and professional growth, enhanced awareness, commitment to service). Furthermore, our directive to students was to write about their professional experiences as a direct tool for later discussion (for dental students) or for formative feedback (medical students). This orientation toward teaching meant that students might have chosen situations or issues where they desired comments or advice, so their TPERs described mostly clinical encounters with “difficult” patients or problems with tutors. On the other hand, instructions from Mofide et al. included “how the incident related to the student’s professional responsibilities”; this was illustrated by quotes that demonstrated U.S. students’ well-articulated understanding of professional responsibilities in dental practice. In contrast, expressions of idealism were quite absent in the TPER writings of the New Zealand students. This could also be interpreted as reflecting differences in cultural expression between this country and the United States.

Differences Between Dental and Medical TPERs

There are a number of possible explanations for observed differences between dental and medical TPERs. First, the dental students were in their final year of training, while the medical students were between one and two years prior to graduation. The medical students were in hospital and community-based attachments where they observed patients, practiced patient interviewing and examination skills, and contributed to discussion about patients, but did not have direct responsibility for medical interventions. In contrast, the dental students assumed considerable responsibility for the formulation of treatment plans and the provision of comprehensive dental treatment, albeit under close supervision.

Second, the dental TPERs illustrate just how “operative” the profession of dentistry is. While this may be so obvious to dental practitioners as to not require mention, the different orientation from medical work was quite striking. In much of medical practice, the role of the doctor is to assess and advise, perhaps to prescribe, but only occasionally to operate. In contrast, dental students routinely perform invasive procedures. Dentistry is a highly technical profession, requiring meticulous attention to surgical and operative detail. It was interesting that this fact was not mentioned in any of the dental TPERs, perhaps already being taken for granted by the students at this stage in their training. By contrast, the medical students (although at an earlier stage in training) were highly self-conscious over their first surgical interventions with patients.

A number of other differences were evident when the dental and medical TPERs were compared. Final-year dental students appeared to be more comfortable in their role of “learning student” in relation to their patients than the medical students. It may be that the continued focus on physical interventions with patients helps this development. In undergraduate medical training, the extended period of time as observers (rather than as nearly autonomous health professionals) could lead to anxieties about their role and less comfort with practicing on patients for their own educational benefit.

A significant developmental issue for medical students is how to approach and “be with” patients who are suffering or dying. Some of their stories were very poignant, revealing their anguish over patients’ pain or intractable suffering. In response to this, many students felt their powerlessness quite acutely, sometimes also realizing that medicine as a whole cannot help. Very few of the dental TPERs dealt with equivalent issues so directly. The closest situation was when students described situations in which local anesthetic had been ineffective and an operative procedure caused considerable pain. Overall, it seemed that dental students were more comfortable than medical students in dealing with patients in pain and distress. This may be because pain (or the fear of it) is relatively common in dental practice; students quickly need to develop strategies for coping with patients’ apprehension and pain.

Similarities Between Dental and Medical TPERs

So far, this discussion has concentrated on some of the differences between dental and medical student experience. Other areas, however, had considerable commonality. One example was students’ responses to treating people they knew personally; for example, being asked by their mother to do a root canal treatment, or for medical students, responding to a close friend who presented acutely in the emergency room. Discussion with both sets of students revealed a wide range of exposure to, and understanding of, the boundaries around the role of the health
professional. Some students were quite comfortable in treating family and friends; others recalled instances of considerable discomfort for them and their patient, vowing to never repeat those situations. Student learning in relation to treating family and friends was driven more by peer experience and open debate than from didactic directives from tutors. In the past, both dentists and doctors have been castigated for gross boundary transgressions; traditional teaching in this area has warned students of the dangers of such behavior. Our goal was to enable students to learn role definition and role boundaries from their own experience, using the issue of whether or not to be a health professional for their friends. An increased awareness of boundaries within the student-patient relationship should facilitate boundary-setting skills when these students graduate and enter professional practice.

Another area of similarity between the dental and medical TPERs was the category of belittlement. In dental training, students are exposed to a wide range of tutors. Some are full-time academics, while others are private dental practitioners brought in to provide clinical teaching on a session basis, without other academic responsibilities. In their discussion groups, dental students mentioned a wide range of tutoring styles. These included tutors who were supportive and respectful of student work, being aware of their developmental stage and accomplished in giving feedback. Others were not so encouraging or aware of how casual remarks could be devastating to student morale. Some students reported being criticized in front of their patient (and later being reassured by that patient!), while there were also stories of tutors being openly critical of another tutor’s treatment plan for a given patient. Throughout these stories, the students’ overriding principle seemed to be to achieve the best result possible for their patients, despite at times being given conflicting advice from different tutors.

Medical students also reported belittlement, both being on the receiving end of personal criticism from tutors and observing senior clinicians being disrespectful toward patients or other staff. These are not new findings, either for undergraduate medical students or for residents (housestaff). The dental literature appears to be less explicit about such undergraduate learning experiences, although student levels of stress, for example, have been studied. Reading the TPERs indicated to us that dental and medical students do not always receive good clinical teaching and that this impacts negatively on their ability to learn.

### Professional Standards, Whistleblowing, and Uncertainty

The issue of maintenance of professional standards was approached slightly differently by dental and medical students, which may have led to the different wording for this category in the two lists. Dental students were highly evaluative of their own technical work and that of others; they noted when previous dental work was considered to be inferior, but were reluctant to communicate their concerns directly to others. Both student groups wrote about how to maintain standards as a profession and whether they should “whistleblow” if they were concerned about a colleague’s work. Most students seemed very reluctant to do so, mainly for fear that such action could subsequently impact on their own university grades. For both medical and dental students, this included a marked reluctance to complain about negative teaching experiences. It may be that this is related to experiences of belittlement, the outcome being that most students were unwilling to confront poor quality work in others or complain about disrespectful teaching behaviors.

There was one exception to this pattern. As noted above, three medical students wrote about their difficulties with the current medical professional development course, outlining their reservations and difficulties with mentoring (all clinical students are allocated a mentor for four to five meetings per year, either by themselves or in groups). These TPERs were well-presented and carefully argued criticisms, which we took seriously, changing arrangements as we could. In contrast, dental students did not question the new professional development course.

In medical TPERs, the related topic of uncertainty in diagnosis and treatment was raised a number of times, with students noting that this was an issue they would have to learn to deal with. There was less discussion about uncertainty by dental students, even though they often saw evidence of the subjectivity of treatment plans, which were frequently changed by different tutors.

### Reflective Practice

In the last few decades, educational theorists have advocated reflection on experience as an important part of professional training. These theories have already influenced medical education, illustrated by the growing number of articles espousing...
activities for students that encourage reflective practice. Henderson and Johnson, for example, reviewed the theory behind this trend, linking self-monitoring of professional competencies to analytic and reflective skills.17 Our approach at Otago University has been similarly based on the theory that self-awareness, self-monitoring, and self-evaluation are necessary prerequisites for ongoing professional development and maintenance. We also believe that our courses encourage students to develop skills in critical thinking, a concept that is often viewed as being essential for health professionals while not being defined (or taught) explicitly. Our own translation of the concept of critical thinking to more practical student activities is listed in Table 5. Using TPERs as a trigger for group discussion could be seen as “worked example” of how to develop critical thinking skills as part of reflective practice.

Yet, despite the well-developed theory behind reflective practice, many educators have uncovered considerable student resistance to these activities. Henderson et al., for example, asked medical students to provide and discuss written reflections on their general practice rotations and later interviewed eighteen students about their response to this style of learning.18 They identified a number of conflicts arising from the process of doing significant event analysis. These were classified as internal (lack of ownership, feeling judged, being a “poor” reflector, etc.) or external (structure of course, quality of relationship with teacher, etc.). They also listed a number of coping strategies employed by both students and teachers to minimize these conflicts. Likewise, Platzer et al. found there were barriers to reflection in their study of group work for nurses.19 For example, nurses’ previous educational experiences “affected the willingness of learners to expose themselves to the judgement of others”; other cultural and educational barriers were also listed.

In our educational intervention in the dental context, such resistance appeared to be reasonably small. Possible reasons were that the TPERs were not used for summative assessment in any way; the stories were used anonymously; there was no instruction to link their experience to faculty objectives; tutors had previous experience of using reflective writing as a trigger for discussion; and there were explicit guidelines about confidentiality and group safety. Despite these arrangements to increase student participation and reduce discomfort, some students still may have found these exercises difficult.

Another potential issue is that there is little evidence so far in terms of educational outcomes to justify these activities to students. In the medical education literature, only one study has demonstrated a link between the ability to learn from reflection and learning outcomes.20 Reflective activities are more developed in nursing than in medical and dental education, but one reviewer questioned whether there was any significant impact on patient care as a result,21 while other writers have challenged the underlying power issues in courses that require reflection from students.22

Despite these observed conflicts and barriers for students and some theoretical reservations about reflective practice, we are confident that a carefully presented course will facilitate students’ cognitive and emotional development.

The Hidden Curriculum

This study of student experience in a modern dental school provided a window into what students are learning about professional behaviors. They are exposed to a range of tutors who exhibit widely varying approaches to teamwork, peer respect, feedback, competence, boundary-setting, and so on. The emerging theory of the “hidden curriculum” suggests that much of student learning falls outside the formal curriculum.23,24 Reading these TPERs confirms the impact of tutor modelling on student experience.

The socialization process that transforms the first-year medical student from “naïve idealist” to “competent house officer” has been well studied.25,26 There is less published data relating to dental education, but one would assume there are similar processes in training and outcomes. Our data suggest that learning encounters in dental education could at

Table 5. Critical thinking skills

Students:

- have the capacity to systematically review and learn from clinical activities;
- are aware of their own reactions to, and involvement in, clinical situations;
- are able to identify the underlying issues;
- can progress from simply mulling over an incident to critical evaluation;
- can develop principles for future situations; and
- can develop an appropriate objectivity about their professional and personal development.
times be at odds with the aims and intentions of teaching; this possibility requires further study.

One educational issue that underpins student experience of teaching and learning (and the variable response to reflective practice noted in the literature) is the hierarchical structure of health professional education and practice. The dental TPERs often revealed the institutional constraints to not challenge the existing ethos and to not “rock the boat.” Similarly, group discussions started quite tentatively as students explored how safe it was to discuss certain topics such as tutor feedback. In our view, students rapidly learn to negotiate their experience and their expressed values within the context of a well-defined hierarchy of knowledge and power. So far, however, there is little dental (or medical) literature that considers the problems underlying this aspect of health professional education.

**Conclusions**

“Professional development” has been described as the next phase in the evolution of medical curricula. As Howe says, “Successful professional development needs to be based on explicit values, which are repeatedly demonstrated in the learning environment and modelled by senior colleagues and tutors.” Dental and medical TPERs in this study revealed just how closely students observe their teachers. Students were also very aware of any observed lapses in professional behavior or conduct, confirming previous findings.

While health professional education needs to be directed towards students’ technical and professional development, the findings of this study support the introduction of specific courses where professionalism is the explicit focus. Although the term “professional development” is still poorly defined, there is a growing body of literature in dental and medical education on professional relationships, teamwork, reflective practice, boundary issues, and so on that constitute an emerging academic curriculum in professional development for undergraduate education. In our view, students need to have regular forums where they can discuss their learning experiences, compare notes with peers, and develop a consensus over which behaviors and attitudes they would like to learn and emulate.

Although it is clear from the literature that such explicit discussion can be difficult within hierarchically based education where students may feel constrained, we think these difficulties are surmountable. As Brownell and Cote have stated, “Residency programmes should develop teaching activities focusing on professionalism that relate to issues residents face in their daily work.”

In summary, we have initiated some new courses in health professional education where dental and medical students are required to reflect on clinical and learning experiences. Their stories reveal how student attitudes and professionalism are negotiated and developed in conjunction with peers and staff. Courses in professional development can help bridge the gap between faculty objectives and student experience. In 2004, we intend to expand on this pilot study with the next cohort of students, using more extensive qualitative analysis.

**Acknowledgment**

We acknowledge the seminal work by Dr. Juliet Broadmore at the Wellington Clinical School of Otago University, who initiated student TPERs as part of the first medical professional development course in New Zealand in 1999.

**REFERENCES**