Teaching Dental Students About Patient Communication Following an Adverse Event: A Pilot Educational Module

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Abstract: Adverse events are an important but understudied area in dentistry. Most dentists will face the issue of an adverse event several times in their clinical careers. The authors implemented a six-hour pilot educational module at one dental school to improve fourth-year dental students’ knowledge and confidence in communicating with patients about adverse events. Based on results from the twenty-nine students who completed both the pre- and posttests, the module significantly increased the students’ knowledge of the key concepts involved in adverse events. However, the module did not improve the students’ confidence that they would be able to implement these communication skills in clinical situations. Based on these results, this article discusses how future educational efforts can be modified to better prepare students for the communication challenges associated with adverse events.

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Adverse events are an inevitable part of clinical practice. They include any care that clinicians provide, or choose not to provide, that has negative, health-diminishing side effects or secondary illness as an outcome. Adverse events can relate to diagnosis, faulty equipment, general safety of the practice, poor communication with the patient or health care team, inadequate infection control, or inadequate waste management. In medicine, adverse events include issues such as misdiagnosis, wound infections, and administration of incorrect medications or dosages. Similarly, some dental examples include intraoperative events, disconnects between provider and patient expectations, early restoration failures, poor quality of care, and untoward systemic reactions to medications or materials.

Communicating openly about adverse events presents a unique challenge for health care providers for several reasons. Even in routine situations, patient-provider communication is inherently complicated due to individual differences in life experiences, values, personality traits, and non-verbal styles. In situations that involve adverse events, patients may express intense levels of emotion, and providers may feel they are ill equipped to manage these types of interactions. Trainees, in particular, may also believe that the professionalism they need to demonstrate in these situations is not compatible with the empathy and compassion that needs to be expressed in difficult times. On the other hand, seasoned professionals, by the nature of their work, may be desensitized to medical news and have trouble fully comprehending the patient’s experience at the moment of disclosure.

Within medical settings, there is growing evidence to suggest that specific training on the communication of adverse events benefits both clinicians and patients. The “full disclosure” model of medical error suggests that when things go wrong in practice, the clinician should provide the patient with pertinent information regarding his or her current condition in an honest and open fashion. When an adverse event occurs, the provider should discuss treatment options with the patient and follow up with the patient to discuss how future error will be minimized. This includes a thorough review of team communication and the procedural issues that may have contributed to error (root cause analysis). Additionally, good health care communicators allow time (a few moments) for patients to process difficult information and also allow time for questions. Finally, providers encourage patients to be equal partners in their clinical decision making, with the provider being the expert.
and coach and the patient being included as a part of the treatment team. Although this approach does not completely shield a provider from litigation, there is strong evidence that this method helps to reduce the amount of monetary damages that patients seek and also reduces the time until settlement. Overall, when providers communicate honestly and openly with their patients about error, patient compliance increases, and patient litigation decreases.

Although there is a strong relationship between the quality of patient-provider communication and patient satisfaction in both medicine and dentistry, health care professionals from both disciplines lack sufficient training in specific, empathic communication methods in the case of an adverse event. Existing programs have focused on medical students and residents, but there are several reasons that dental students should also be trained on the communication aspects of adverse events. First, most dental procedures have some risk associated with them, however small. Second, dentists are ethically required to disclose adverse events to patients. Finally, consistent with medicine, open, empathic communication and full disclosure of error appear to have the best legal outcomes for the dentist in malpractice situations.

However, many dentists are not familiar with the full disclosure model, and still fewer appear to implement it in their everyday clinical practice. There are many reasons for this. Dentists may be unsure as to what depth and amount of information should be shared in order to adequately inform patients without overwhelming them with too much detail. Also, despite literature supporting full disclosure, dentists report being wary of long-term consequences such as litigation, the potential deterioration of professional reputation, and the resulting feeling of failure. Overall, the most common concerns that dentists cite for not disclosing error are financial reasons (related to malpractice and litigation ramifications) and lack of accountability.

Some barriers to adverse events training and full disclosure are particularly pronounced in the dental school setting. For example, it may be difficult for students to openly discuss errors with instructors. Also, because adverse events are relatively rare and especially so for each individual student, there are few opportunities for repeated practice to improve communication skills related to adverse events in the clinic environment. Students may experience adverse events in a handful of cases during their education, but they may have little opportunity to reflect and learn from these cases in a structured manner. Thus, educational interventions may be the key to educating students about the importance of addressing error, improving skills in this area, and training future dentists to apply full disclosure to their clinical practice.

Since adverse events are an important and understudied area in dental education, a pilot instructional module was implemented at our dental school to improve fourth-year dental students’ knowledge and confidence in communicating with patients about adverse events. Based on the results of this module, the purpose of this article is to discuss how future educational efforts in this area can be modified to better prepare students for the communication challenges associated with adverse events.

### Methods

#### Module Content

The module was initiated with fourth-year students at a large dental school in the United States (the College of Dentistry at the University of Illinois at Chicago) and partially fulfilled a course requirement in the fourth year of the D.D.S. program. The purpose of the six-hour module was to increase students’ knowledge about adverse events and to increase their confidence that they would be able to communicate with patients about adverse events.

The module consisted of three separate sessions over a five-week period. The first session began with a ten-minute pretest (the Adverse Events Scale described below) followed by a two-hour lecture and discussion on the communication aspects of adverse events. This session included a discussion on the specific ways that students could control for adverse events. For example, we emphasized the importance of obtaining informed consent from patients (including a thorough verbal discussion of the risks and benefits of the treatment plan). We also talked about ways to maintain good communication with the treatment team (hygienists, supervisors, etc.). We reviewed the full disclosure model of responding to error, as well as the importance of apologies when appropriate in dental practice. The module included information about the need for a follow-up session with the patient and/or family about the cause of error in a principled response to an adverse event. We also reviewed the importance of a root cause analysis to discover the source of errors. We presented students with data about the effectiveness of these methods, including
information about increased patient satisfaction and decreased litigation. We also reviewed how providers can talk to patients about corrective measures after adverse events have occurred and enlist patient cooperation. We briefly discussed provider characteristics (e.g., fatigue, stress) that may increase the likelihood of adverse events, as well as the importance of the treatment team meeting after complicated procedures to discuss how well the team worked together.

At the end of the first session, students were instructed to choose a partner, and each team was responsible for presenting a clinical case in the next two sessions. Students were provided with a PowerPoint template to help guide their presentations. Based on the information provided in the initial two-hour lecture, the template instructed students to provide a description of a situation related to an adverse event in practice, discuss what specific issues made the situation challenging, review their course of action, and provide a rationale for their course of action. The template prompted students to reflect on their concerns about the situation, the patient, or the treatment itself. The template also included a section focused on how the patient reacted and a reflection on how similar cases could be handled in the future (lessons learned). Finally, students were asked to pose two specific questions to their peers for class discussion.

The remaining two sessions lasted for two hours each. In each session, student teams presented one relevant case for classroom discussion that took place anytime during their dental education. Sample cases included not thoroughly explaining the risks of a procedure to a patient (e.g., a root canal) and having to communicate with the patient if the treatment failed, finding that the work done by a previous dentist was inadequate (e.g., an open margin on a newer crown), and managing unrealistic patient expectations (e.g., being able to eat steak with a new denture). Each group presented its cases for ten to fifteen minutes. Class discussion encouraged students to identify how the concepts discussed in the lecture session could apply to the case. Following the two days of presentations, the posttest (the Adverse Events Scale) was administered for approximately ten minutes.

Because completion of the module was a requirement for students, twenty-nine fourth-year dental students attended all three sessions. All sessions were held in a classroom on campus. The remaining fourth-year students (n=31) were on offsite rotations for the summer and were not present for any of the module sessions. Instead, these students were required to listen to an audio podcast of the initial two-hour lecture. All student presentations were posted on an online course site. Students who were offsite during the module were required to review one student presentation and respond to the questions posed in the presentation in the form of a written assignment. Because students who were offsite were unable to participate in classroom discussions, we did not ask them to complete the Adverse Events Scale because they did not receive the module in its entirety.

**Adverse Events Scale**

The pre- and posttests were based on a measure developed to train medical students about adverse events; the measure has been used to demonstrate medical student learning in this area. The only modification we made was to use the word “dentist” instead of “physician” to make the measure relevant to dental students.

The pre- and posttest Adverse Events Scale was identical in form and content. The self-report questionnaire had twenty multiple-choice, single-answer questions and could be completed in ten minutes. Participants indicated their level of confidence or agreement with the statements (1=not confident to 5=very confident). Sixteen males and thirteen females completed the pre- and posttest questionnaires. No identifying information was collected on the questionnaire. To encourage an honest assessment of students’ strengths and weaknesses, during distribution of the pre- and posttests students were notified that the attendance record of the module would not be connected to the questionnaire data. The questionnaires were on paper, completed while in the classroom, and submitted prior to participants’ departure.

For the purpose of our analysis, we chose to focus on nine questionnaire items that appeared to measure three key concepts that we discussed in our initial lecture. Thus, we grouped the nine items into three subscales. The first subscale, “Understanding of Error,” consisted of three items in which participants agreed or disagreed that they understood the basic concepts of full disclosure and apology. The second subscale, “Communication After Error,” contained three items that focused on participants’ confidence that they would actually be able to use these communication skills in a clinical situation. The last subscale, “Team Factors,” consisted of three items that measured the perceived importance of team
debriefing and team communication in controlling for error.

Our goal was to use this pilot data to understand how future educational efforts in this area can be modified to better prepare students for the communication challenges associated with adverse events. The Office for the Protection of Research Subjects at the University of Illinois at Chicago reviewed the proposal for this project and determined it did not involve “human subjects” as defined in 45 CFR 46.102(f) and thus was exempt from review.

Results

Twenty-nine participants completed both the pre- and posttests. Table 1 shows responses to the survey questions. To reduce the likelihood of alpha inflation associated with multiple t-tests, we compared pre- and posttest scores using two tailed t-tests on the three subscales; we did not examine differences on individual test items unless the individual subscale showed a significant change.

Overall, participants reported significant change in the Understanding of Error subscale, based on their pretest (M=3.20, SD=0.75) and posttest (M=4.08, SD=0.61) scores, t(56)=4.89, p<0.001. Although the module did appear to increase scores on the Communication After Error subscale (pretest M=3.66, SD=0.77; posttest M=3.97, SD=0.67), this difference was not statistically significant, t(56)=1.58, p=0.12. Similarly, the module appeared to positively influence the Team Factors subscale (pretest M=3.95, SD=0.53; posttest M=4.16, SD=0.59), but this difference was not statistically significant, t(56)=1.39, p=0.17.

Discussion

The purpose of our pilot educational module was to increase students’ understanding of and confidence in the communication aspects of adverse events. From our pre- and posttest analysis, it appears the module was partially successful. It is encouraging that the participants reported a greater understanding of concepts such as full disclosure, root cause analysis, and the components of a clinical apology. However, we were not able to increase the students’ confidence that they could actually communicate with supervisors, families, and patients in these situations. Although the students presented cases and evaluated their own performance based on the content of our initial lecture session, this exercise was not enough to make them feel they could actually apply these communication skills in clinical practice. The module was also not successful in increasing the students’ understanding of the importance of team-related communication, although this appeared to vary somewhat by situation. Interestingly, even prior

Table 1. Adverse events scale results

<table>
<thead>
<tr>
<th>How confident do you feel in your ability to:</th>
<th>Pretest (n=29)</th>
<th>Posttest (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding of Error subscale</strong> (average of items 1-3)</td>
<td>3.3</td>
<td>4.1*</td>
</tr>
<tr>
<td>Understand the principles of full disclosure and transparency in dental practice</td>
<td>3.6</td>
<td>4.3*</td>
</tr>
<tr>
<td>Understand the components of an apology in dental practice</td>
<td>3.3</td>
<td>4.3*</td>
</tr>
<tr>
<td>Facilitate and/or lead a root cause analysis of medical error</td>
<td>2.8</td>
<td>3.7*</td>
</tr>
<tr>
<td><strong>Communication After Error subscale</strong> (average of items 4-6)</td>
<td>3.7</td>
<td>4.0</td>
</tr>
<tr>
<td>Admit you made a mistake or error to a patient</td>
<td>3.7</td>
<td>4.0</td>
</tr>
<tr>
<td>Engage in the process of full disclosure with a patient and/or his or her family after committing a medical error</td>
<td>3.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Admit that you made a mistake to your supervisor and/or risk manager</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Team Factors subscale</strong> (average of items 7-9)</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>A debriefing and critique of procedures and decisions after patient care are important parts of developing and maintaining team coordination</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>The pre-procedure team briefing is important for safety and effective health care team management</td>
<td>4.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Dentists should encourage team members to question procedures during normal and emergency situations</td>
<td>3.1</td>
<td>3.1</td>
</tr>
</tbody>
</table>

*Significant at p<0.05

Note: Scale ranged from 1=not confident to 5=very confident.
to the module, the students felt that debriefings and pre-procedure briefings were important in clinical practice. However, the students did not seem to appreciate the role of critical questioning by the team members to control for error. Although we do not have data on the fourth-year students completing off-site clinical rotations, it is possible that these students may have demonstrated a greater level of confidence in communicating with patients and other professionals about adverse events. Perhaps their greater exposure to clinical settings outside of the dental school clinic would have helped them to become more skillful in this area. Finally, it is possible that having confidence in managing adverse events is not necessarily expected at this level of training (fourth year of dental school). Perhaps confidence only develops in the first years of independent practice.

Based on our experiences piloting this module, we suggest that future educational modules on adverse events include a wide variety of educational strategies through the course of training to boost understanding and begin to improve confidence in this area. We suggest that training begin on the cusp of preclinical to clinical education. In the first set of sessions, training could include initial lectures on adverse events. Standardized patients could also be used to help students role-play talking about an error with a patient or family member and to help students practice talking to supervisors about mistakes. Students can also meet in groups to discuss clinical case vignettes involving adverse events. Overall, using lecture, standardized patients, and clinical vignettes allows students to have repeated practice over time to master these skills.

We suggest that a second set of sessions take place after students have several years of clinical experience, including rotations outside of the dental school clinic if possible. At this time, students can present clinical cases for discussion and reflect on the importance of team communication (including dental hygienists, dental assistants, and front desk staff) as well as dentist-patient communication to manage adverse events.

Finally, we cannot expect dental students to learn how to communicate openly about adverse events without training mentors in the clinic. These communication skills are highly advanced, and observing the proper communication skills of instructors is extremely important. Because the students reported feeling it would be difficult to actually talk about these subjects and to ask critical questions to their team, it is important that educational modules target clinical instructors as well as dental students. Clinical faculty members could be given access to the lecture material presented to students. Yearly workshops (using role-plays or standardized patients) could focus on how instructors can communicate with students and patients regarding adverse events, with a particular emphasis on encouraging students to openly discuss mistakes and learn from errors.

This study had several limitations. It was conducted with a small number of students and was limited to one dental school. Furthermore, student case presentations and the Adverse Events Scale both relied on self-report. There are several ways that future studies can improve our understanding in this area. Future surveys should examine larger samples of dental students across North American dental schools, as well as globally. Future research can also include other measures that relate to adverse events. For example, clinical supervisor narratives as well as chart notes can provide important information about the management of adverse events. Finally, research can focus on how confident dental educators feel about disclosing errors to patients. Better understanding the role of faculty is extremely important when implementing educational modules on sensitive topics such as this one.

**Conclusion**

Striking a balance between being professional and compassionate in the health care setting is complicated and challenging, but possible. Twenty-first century health care is consistent with a patient-centered approach that emphasizes clinician-patient rapport in addition to diagnosis and procedures. Specifically, this approach requires providers to communicate openly and clearly with patients, involve patients in decision making, and treat their patients with compassion and understanding. Training the next generation of dental providers on how to effectively manage adverse events is an important area of focus, both for the success of individual providers and the patients they serve. Our pilot module demonstrated one way to launch such a project. Dental curricula should continue to focus on this important area.

**REFERENCES**