Dental Team Experience (DTE): A Five Year Experience

Rebecca L. Stolberg, RDH, MS; Lisa A. Bilich, RDH, MS; Michele Heidel, CDA

Abstract

Purpose: Several European countries have interprofessional training for health care professional students, including dental and dental hygiene students. However, very little training exists in the U.S. where dentists and dental hygienists are educated together. The 4th World Congress of Preventive Dentistry and the American Dental Education Association have stated that teamwork must be taught in the dental professions. In 2005, Eastern Washington University began an interdisciplinary team experience in which graduating dental hygiene, dental assisting and dental students worked in an interdisciplinary team providing care to the underserved. A new team was formed each year for the next 5 years. This paper addresses the establishment and outcomes of this interdisciplinary experience.

Keywords: Dental Team, Interdisciplinary, Interprofessional Education

This study supports the NDHRA priority area, **Health Services Research:** Determine the extent to which dental hygienists' working in collaborative practice settings with other health professionals or organizations improves the cost–effectiveness and quality of health care outcomes.

Introduction

Since the beginning of dental hygiene education, dentists, dental hygienists and dental assistants have been trained in isolation of one another. If the dental hygiene student is enrolled in a dental hygiene program associated with a dental school, the student may be able to provide care in a team environment with a dental student. However, the majority of dental hygiene and dental assisting programs are located in community and technical colleges, making it difficult to interact as a team prior to graduation.

Examples exist in the literature, primarily in European countries, of interprofessional training of nursing, medical, physical therapy and occupational therapy students.[1–5] Communication and respect among medical and nursing students improved in interprofessional training experiences in the U.K.[1–3] In 2009, 616 medical, nursing, physical and occupational therapy students participated in a 2 week clinical teaching experience in Sweden. As a result of their experiences, the students reported improved knowledge of other professions' skills, communication and teamwork philosophy.[4] In another study, students of medicine, nursing, occupational and physical therapy departments were trained together in a clinical setting in Denmark for 3 months. Results showed that patient outcomes improved with fewer complications found in those patients treated by an interprofessional team.[5]

The concept of educating dental and dental hygiene students together has been done in some other countries. The University of Groningen, Netherlands, educated dentists and dental hygienists together.[6] Each week students in both groups focused on a specific case study. By the last year of study, dental hygiene students managed a student team practice along with dental and dental assisting students. The Dalhousie University School of Health Services Administration, Nova Scotia, Canada, constructed interprofessional learning modules for students from dentistry, dental hygiene, nursing, medicine, social work, occupational therapy, pharmacy, audiology, health education and kinesiology.[7] The curriculum was formed on the premise that, if you educate professionals to work together more effectively, their treatment for the clients and patients will be enhanced by such cooperation. The modules were well received by students. Barriers included university administrative support and the need for faculty support and rewards for working towards interprofessional education. There was evidence in the literature illustrating dental hygiene and dental school program attempts to work together on external clinical rotations. The University of Alberta Dental School has dental and dental hygiene students serve a minimum of 2 weeks at community clinics together.[8] Goals of this project are to have students become more confident about

their own abilities and to foster professional and interprofessional relationships between different dental practitioners.

Minimal evidence exists as to outcomes associated with similar attempts in the U.S., especially in dentistry. Evans et al stated the need for further attempts at interprofessional dental education in the U.S. because teamwork is essential for the provision of contemporary high quality oral health care. Formal curricula and opportunities are needed as only anecdotal evidence currently exists.[9] The University of Maryland began having dental and dental hygiene students partner to provide comprehensive care to patients in 1981.[10] The reason cited was to simulate post graduation practice of dentistry. Interdisciplinary training among dentists and dental hygienists was also seen to be essential by Old Dominion University, and in 1986 they devised a curriculum that would facilitate teaching collaboration among these 2 professions.[11] When the dentist and dental hygienist develop a collaborative working relationship, the productivity, individual work satisfaction and continuity of care will be strengthened. This practice model stressed mutual respect, economic realities and collegiality. They suggested role playing to be a vital part of this model.

In 2002 the University of Southern California School of Dentistry launched an interdisciplinary project including dental and dental hygiene students, medical and nursing students and social work students.[12] The project was conducted externally in elementary schools and mobile clinics. While project outcomes were positive, the sustainability was questioned due to scheduling difficulties and uncommitted faculty. Many community service events include dental and dental hygiene students working together, such as Give Kids a Smile Days, school based projects and mobile health clinics.[13–16]

The 2006 American Dental Education Association Commission on Change and Innovation in Dental Education stated the vision of the health care team is clouded by the reality that students in isolated health professions have little interaction with each other.[17] Dental students typically experience the 4 years of dental school in complete isolation from other students in the allied health professions. R.E. Nowjacks–Raymer noted at the 4th World Congress of Preventive Dentistry that teamwork must be taught.[18] All health care professionals must be formally taught how to be effective team participants and be given the opportunity to practice the skills involved in teamwork. In order to alleviate lack of respect between disciplines, roles must be respected and each team member utilized to their fullest potential. Effective communications must be established with conflict being resolved.

Methods and Materials

Dental Team Experience

In 2004, Eastern Washington University (EWU) began the development of an interdisciplinary team experience. The purpose of this experience was to provide an opportunity for dental, dental hygiene and dental assisting students to work as a team prior to graduation in hopes that they would be better able to function as licensed dental team care providers. This paper will describe the process of initiating the program, including planning, funding and logistics. In addition, the paper will report outcomes found over a 5 year period.

Discussions with the state's only dental school, the University of Washington School of Dentistry, lead to an agreement to have senior dental students participate. To gain the full complement of a dental team, the local dental assisting program located at Spokane Community College (SCC) was invited to participate. The outcome was a dental team consisting of senior dental hygiene students, senior dental students and dental assisting students in their final quarter of study. This 5 year running project, which began spring 2005, was called the Dental Team Experience (DTE).

Funding

It was necessary to secure funding for a coordinator, dental materials, dental equipment and housing for the dental students. Funding for the coordinator was initially obtained from the EWU president in the amount of $5,000, with the additional salary of $7,000 being secured from the local dental society. The dental hygiene program was looked upon very favorably by the current university president who was very supportive of innovative efforts in education. Many dental faculty were members of the local dental society and they were able to obtain the additional funding needed.

The community college and university clinics lacked dental instruments and supplies to add the teams to their clinics. Thus, donations from dental corporations were sought via an informational letter of request. Some corporations donated money, some instruments and supplies. The remainder of the necessary equipment and supplies was purchased using discretionary funds from EWU and

the community college. The instruments were used only for the 3 week DTE experience, so there is minimal wear and tear on them.

The second and third year, the coordinator and scheduler salaries were supported by Robert Wood Johnson Foundation Community Dental Education Pipeline Program dollars. For years 4 and 5 the university and community college funded necessary salaries and supplies.

Mission and Goals

A mission and 6 goals were developed by the DTE coordinator, dental hygiene program director, dental assisting program director and dental school liaison. The mission was to provide an opportunity for all team members to work together to provide services to the underserved population of Spokane County and to experience the complexities of dental practice. A key portion of the mission was not only to train dental team members together but to assure that the underserved gain access to care. Goals for the DTE were as follows:

1. To increase efficiency of the team
2. To provide an opportunity for all team members to work together
3. To provide services to low income and the underserved population in Spokane County and surrounding areas
4. To provide quality care to patients as evidenced through patient evaluations
5. To appreciate the need for the development of the leadership skills
6. To appreciate the complexities of dental practice

Student Selection

Dental student participants were required to satisfy specific criteria to be selected for participation. The criteria included completion of all restorative dentistry requirements, the Chair of Restorative Dentistry approval and a willingness to relocate to Spokane, Wash for 3 weeks. A total of 3 dental students were selected. Initially there were not as many dental students interested in participating in DTE for the first 2 years because of the commitment required to be in Spokane for 3 weeks. However, after hearing about DTE from dental students who had participated, more excitement and interest was garnered which caused the process to become more competitive.

Selection of dental hygiene student participants was based on satisfying the following requirements: dental hygiene students must have completed the restorative requirements necessary to take the Western Regional Board Exam, be current on their clinical requirements and complete an application including an essay on how the student felt they could contribute as an effective team member. A total of 5 dental hygiene students were selected each year. Approximately 12 dental hygiene students applied each year.

Dental assisting students were selected based on their ratings of performance after their first of 2 externships, in addition to supportive faculty evaluations and the amount of time they had spent performing chair side assisting. A total of 8 dental assisting students were selected. Because the dental assisting program had 48 students from which to choose from, the dental assisting program director selected who was available to participate in the DTE.

Sites

EWU Department of Dental Hygiene clinics served as one site giving the opportunity for the dental team to see patients in a dental hygiene school environment. Eight chairs were used at EWU with a preceptor dentist.

The second site was a Federally Qualified Health Center (FQHC) safety net clinic that treats low income and the uninsured, and is the location for the HIV clinic for Eastern Washington. Seven chairs were used by the DTE students with 1 lead dental assistant, a dentist preceptor and a registered dental hygienist employed by FQHC to help onsite for the experience. The FQHC handled its own billing and payment procedures.

The third site was the dental assisting clinic at SCC. While at this site the dental team treated mostly community college students. Twelve chairs were used with a volunteer dentist from the community helping with the experience. EWU handled billing and insurance issues for the community college as they were not set up to perform these functions.

Affiliation Agreements

Affiliation agreements needed to be signed among the 3 clinical sites. Adjunct faculty appointments with the dental school were also necessary for dental student supervision.

Orientation

Orientation was seen as a critical piece of the DTE. The goal of this portion of the experience

focused on introducing students and beginning to define their preferred work environment. Morison et al found that, as a result of dental professionals' isolated educational experiences, students have little knowledge of roles of each other in the dental team or how they fit into a team.[19] Obstacles identified from the results of isolated education can be the lack of communication in the team, as well as role identity in the dental practice.

There were several tools introduced during orientation that could be used to deal with the challenges of forming a new team, including conflict management, early team management skills, 360 degree assessment and components of successful team meetings.

Originally, orientation was held two days before clinical practice. Over the first 2 years, the structure changed – orientation was held one day before clinical practice, with team–building exercises held throughout the entire experience. Based on feedback from students, the orientation was organized in a more succinct manner, due to the difficulty for many students to miss educational experiences in their classrooms to come to another site. The use of an online learning management system (LMS) for assignments and initial introductions was seen as a helpful tool.

The DiSC Personal Profile System® (Inscape publishing, Mount Prospect, Ill) was used extensively to help students discover the best way they work with a team. The tool helped to identify their behavioral style and which strengths they can provide to the dental team. The key was having students understand there is no right or wrong answers – it is meant to be a non–judgmental reflection on preferred work style. Conflict is inevitable among a team which can lead to poor quality dentistry, unproductive days and a lack of communication.[20]

The students guide the process and the team formation during orientation to provide optimal care for patients and meet the needs of the team. The group was required to determine the mission and vision of the team during orientation. Considering that dentists, dental hygienists and dental assistants are educated in different environments and may not be aware of the functions and abilities of each, it was an ambitious goal to form a dental team quickly. To facilitate integration, groups were formed to include each team member. Dentist, dental hygienist and dental assistant facilitators for the experience role modeled the optimum team so that participants could observe unity and open communication.

Results

While at the FQHC site, the team provided care to approximately 110 patients totaling $7,500 in dental treatment. While at the EWU site, the team provided care to approximately 75 patients totaling $6,640 worth of dental treatment. While at the community college site, the team provided care to approximately 115 patients totaling $7,675 worth of dental treatment.

Full participation in clinical experiences and assessment of each week was required by all participants. These surveys were a 360 degree assessment of the team for that week. Dental students were asked to assess dental hygiene students' cognitive and professional behavior each week. This allowed the hygiene student time to self–reflect and get feedback on how they were perceived by the team. Skills that were assessed included cultural awareness, treatment planning execution, critical thinking, integrity toward team and problem solving. Dental students were also given feedback on cognitive and team leadership skills by the dental hygiene and dental assisting students. The skills assessed for dental students included treatment planning follow–through, confidence, total patient care, communication, recognizing strengths of each team member, fostering trust and goal setting. All students were asked to evaluate the whole team each week. Each participant was asked to evaluate their communication, trust, support provided to team, conflict resolution skills and organization. The students tracked the evaluations to be able to note progress of the team. An entire program evaluation took place at the end of the 3 week time period.

Team meetings were divided into 2 types – the morning huddle and the end of the week staff meeting. The morning huddle focused on events of the previous day, suggested improvements and role assignments. Dental assisting students worked a variety of roles, ensuring that each had the opportunity to assist both dental and dental hygiene students. Dental hygiene students were either assigned to restorative, dental hygiene therapy or utilized as a roving dental hygienist to help with anesthesia or provide support for a dental or dental assisting student. This individual was also charged with quality assurance of charts at the end of the day. Treatment by dental students was discussed with the dental mentor to ensure was followed. End of week meetings helped with self–efficacy of each team member by reminding them how well they performed.

Patient surveys were conducted annually (Table

Table I: Patient Outcome Survey

Please Rate Us:	Excellent	Very Good	Good	Fair	Poor
1.Courtesy/attitude of receptionists	44	7		1	
2.Courtesy/attitude of faculty	1343	7	1	1	
3.Courtesy/attitude of team	44	6	2	1	
4.Cleanliness of dental clinic	44	8			1
5.Quality of overall care you received	41	8	2	2	
6.How well were your questions answered	39	8	2	1	2
How well did dental team member explain:					
7.Your gum & tooth condition	32	13	2	2	
8.The treatment you needed	34	10	2	2	
9.Your options on where to get treatment done	27	9	1	1	2
10.Your option to refuse treatment	24	8	1	3	2
11.The risks and benefits of treatment/no treatment	24	9	1	2	1
12.The cost of your treatment(s)	628	10		1	3
13.The work which you could have done	27	6	3	2	1

I). Many of the clients needed more treatment than the DTE teams were capable of providing. The project was hesitant to perform even single canal root canals because of the lack of ability to follow–up with the clients. Equipment was a limiting factor for extractions as well as lack of ability to follow–up. Overall, patients were very pleased with the program.

Each dental student had a week of required private practice observation and limited treatment in varying dental offices. Types of offices included oral surgery, pedodontics, general dentistry, periodontology, orthodontics and endodontics. Students reported the least benefit and learning from these experience during the DTE mainly because they wanted to be treating clients.

Discussion

Challenges to the 5 year DTE project were numerous. Students expected to be treated as practitioners and not students. However, the faculty at all involved educational facilities knew they had not yet graduated, nor were licensed. In addition, some of the students failed to keep accurate records. Many were uncomfortable walking into a new clinical environment each week and felt it was too much to learn. Students commented that there was lack of standardized hours at each site, standardized computer patient software and felt there was a lack of calibration among sites. Part of the goal of the program was development of leadership skills for the students, and this was attempted by placing students in different environments so they were forced to rely on team members for success. The clinical sites purposely did not calibrate with one another because they felt it was important for the team to figure out how to cope with a new environment each week. The project team determined this to be an actual positive aspect of the DTE, since inconsistencies are a natural occurrence in practice.

Budget issues were always present. The FQHC lost $15,000 to have the DTE there because of having to dedicate 7 of their chairs. However, the FQHC's clinical director still felt the experience was invaluable and worth this loss. The first year the coordinator didn't have enough time to schedule clients so the EWU staff was overburdened with this job. It became evident that a scheduling person would need to be assigned for future success.

An unintended consequence of the DTE was the mere fact that not all dental hygiene or dental assisting students could participate, which led to hurt feelings from those who were not chosen. In addition, the teams functioned differently each week because one dental student was participating in the private practice rotation any one week and not in the clinical portion of the experience for that week.

In terms of success, procedures were done faster each week as the event progressed. Dental students gained true understanding of capabilities of both dental hygienists and dental assistants. Dental hygienists gained better understanding of how to work with a dentist and dental assistant.

Dental students saw more patients in 3 weeks than they had seen in 2 years of dental school. Each year all students unanimously would recommend others to participate in this experience. Students felt there was a growth potential in this experience that outweighs a full quarter at school. One dental student participant responded:

"This by far has been the highlight of my school career! I learned so much about myself, strengths and weaknesses, what to look for in future employment. It really prepared me and gave me the confidence in myself and my training."

A dental hygiene student stated:

"It definitely helped my time management, communication, teamwork skills an immeasurable amount. I am so happy I had this experience as I am so ready for work."

Another dental hygiene student stated:

"It was amazing learning how the different dental professionals function. It gave me a greater respect for each professional."

The dental students commented on growth in team management skills, dealing with frustrations in the clinical setting and communication with other team members. The dental hygiene students commented on growth in improved anesthesia technique, speed for all procedures, communication with patients and team and adaptability to different sites and different patient types. The dental assisting students commented on growth in faster and more accurate x–rays, health histories and blood pressure reading, better chair side assisting, improved 3–way syringe and suction use and improved communication with the team and patients.

The mission of the DTE was achieved in 2 ways. Dental, dental hygiene and dental assisting students gained respect for each member's capabilities, as well as how to utilize each member better. The Spokane community was served with an average of $21,000 annually of high quality dental treatment provided by the DTE. The faculty, staff and project coordinator found the DTE to be an extremely beneficial interdisciplinary team experience. Each year more of the challenges were transformed into successes. It can be argued whether the participating student or the community were the largest benefactor in that the participant gained so much real life experience, while the community gained necessary dental care that it would not have otherwise been provided.

As the DTE progressed, 4 major recommendations surfaced:

1. The dental assistants appeared to have the largest amount of frustration with working outside their comfort zone – one recommendation would be to start the rotations at the community college
2. Expectations need to be clearly stated to all students in manual/written form – students often behaved as if they were already graduated and licensed since they were no longer at their home site
3. An orientation was needed at each site on the Monday morning of the week the DTE was at that specific site to keep all of the information current and consistent
4. It became important to have the experience earlier in the academic year so the dental students were not away from the dental school for end of year activities

Due to the current economic situation and budget shortfalls, the DTE was placed on hiatus for 2010 and 2011. With budget constraints it became difficult to justify a 3 week experience in which only a few chosen students at all institutions could participate. It will also be valuable to consider a mechanism by which all students could participate in such a rewarding and educational stimulating team experience, thereby eliminating those who feel that they were not part of the chosen group. In the current budgetary situations found across all levels of higher education, investment in creative educational solutions will need to impact all students, not the select few.

Meanwhile, another dental experience has begun at EWU – the Regional Initiatives in Dental Education.[21] This program is an extension of the University of Washington School of Dentistry in which 8 first year dental students accepted to the School of Dentistry participate in coursework in Spokane, along with medical and dental hygiene students. These 8 students then return to their home campus for the second and third years of dental school, followed by a return to Eastern Washington for a portion of their fourth year. While this experience is not exactly the DTE, it does allow for some dental students to interact more regularly with dental hygiene students.

Conclusion

From a dental hygiene education perspective, the outcomes achieved by dental hygiene students who participated in DTE were well above expectations. Unfortunately, dental team members are

often trained in isolation of each other. If dental hygiene students are fortunate to train within a dental school, they may have limited opportunities to interact with dental students, but rarely with dental assisting students. By bringing dental and dental assisting students to the dental hygiene school environment, we were able to provide a team experience for dental hygiene students in which they could grow in clinical skills, improve time management and also gain insight into how to best interact with a dentist. This experience can only help improve the dental hygienists' ability to be an excellent member of the dental team.

Rebecca L. Stolberg, RDH, MS, is a professor and Department Chair of the Department of Dental Hygiene at Eastern Washington University. Lisa A. Bilich RDH, MS is an assistant professor at the Department of Dental Hygiene at Eastern Washington University. Michele Heidel, CDA, is a dental assistant and office assistant in the Department of Dental Hygiene at Eastern Washington University.

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