Attitudes Towards Shared Learning of Trainee Dental Technicians and Undergraduate Dental Students

Michael G. Reeson, BA (Hons), MA, PhD; Caroline Walker-Gleaves, BSc, MA, PGCE, EdD; Ian Ellis, BDS

Abstract: The challenges of health care are increasingly complex and subject to frequent change. Meeting these demands requires that health professionals work in partnership with each other and the patient. One way of contributing to this is for students to learn together. However, effective teamwork requires an education system that helps to foster understanding among all those entering the health workforce. The purpose of this study was to investigate the attitudes towards shared learning of undergraduate dental students and trainee dental technicians in a university dental school/hospital in the United Kingdom. Twenty-five trainee dental technicians and 75 undergraduate dental students took part in the study over five academic years. Data were collected using structured questionnaires. A 100% response rate was achieved from the questionnaires. The results indicated the majority of students recognized the benefits of shared learning and viewed the acquisition of teamworking skills as useful for their future working lives, beneficial to the care of their patients, and likely to enhance professional working relationships. The study also found a positive association of being valued as an individual in the dental team by all student groups. Future dental curricula should provide opportunities to develop effective communication between these two groups and encourage teamworking opportunities. These opportunities need to be systematically developed in the dental curriculum to achieve the desired goals.

Dr. Reeson is Chief Instructor of Dental Technology, School of Dental Technology, The Dental Hospital, Newcastle upon Tyne, United Kingdom; Dr. Walker-Gleaves is Senior Lecturer in Special Education and Inclusion, School of Education, University of Durham, Durham, United Kingdom; and Dr. Ellis is Associate Clinical Lecturer, School of Dental Sciences, Newcastle University, Newcastle upon Tyne, United Kingdom. Direct correspondence to Dr. Michael G. Reeson, School of Dental Technology, The Dental Hospital, Richardson Road, Newcastle upon Tyne, NE2 4AZ, United Kingdom; 44(0)191-282-5123; michael.reeson@nuth.nhs.uk.

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The importance of shared learning among health professionals is a central theme in the United Kingdom government's health and social care policy.[1,2] Nationally, the promotion of such learning at all levels is a key government strategy to improve communication and collaborative working to enhance quality care for all service users.[3] With regard to dental education in the United Kingdom, the General Dental Council is also committed to the development of teamworking to improve collaboration and foster a better understanding of one another's role than has previously been the case.[3] In the United States, the American Dental Education Association (ADEA) acknowledges the importance of collaborative education in dental schools. A recent ADEA study group recommended that dental education should promote "efficient and quality oral health care for both prevention and treatment of oral disease" and suggests this can best be achieved "when members of the oral health care team work together collaboratively" (p. 1253).[4] Indeed, some recommendations in the study group report suggest that much greater attention should be paid by dental schools to develop team competencies for dentists and allied dental professionals. One way of contributing to this is for students to learn together. However, whilst there is little dispute in the literature of health professions education that interventions should be grounded in as much teamwork and collaboration as possible, most health care education (particularly in the preregistration university or classroom setting) remains uniprofessional, with students in a single health profession learning together rather than with or alongside students from other health professions.[5]

While the uniprofessional context is an important arena in which learners develop knowledge, skills, and behaviors relating to their own and other professional groups, it does not educate students in the minutiae of social and relational interactions that underpin, but are often viewed as peripheral to, professional working practices.[6] However, previous research has mostly involved nursing, medical, and associated professionals and students, with few studies of dental students and particularly in which their learning occurs with allied dental professionals.[6-13] Although these studies report a positive outcome to shared learning with dental students and allied dental professionals, many of these also identify a fundamental lack of knowledge with regard to team roles, responsibilities, and experience. In one study, the role of the dental technician was perceived as "outside" the dental team due to lack of patient interaction.[10]

One way to develop a model for change in dental education and to engage the broader dental team is to plan opportunities for shared learning. A most significant rationale for shared learning concerns its ability to overturn persisting stereotypes within professional cultures during the early stages of training, which would otherwise be highly resistant to modification once communities of practice are fully formed.[14,15] Standing behind this process is Contact Theory.[16] According to this theory, interaction between members of different groups under a controlled set of conditions can lead to a reduction in prejudice.[17] Reflection on the role and importance of others leads to better understanding and a more reinforced acquaintance, which, in turn, reduces prejudice and breaks stereotypes, thus facilitating environments conducive to collaboration.[18]

Shared learning with the aim of elevating the longer term impact on teamworking is clearly important. However, most predoctoral dental education is delivered independently to dental care professional training even if some of these programs are delivered within the same establishment.[19] As a result, this may require dental schools to devise innovative mechanisms through which such experience can be gained. The aim of this study was to explore the attitudes of both trainee dental technicians and undergraduate dental students towards such shared learning.

Methods

Ethical approval for the study was granted by the Research Ethics Committee of The Dental Hospital, Newcastle upon Tyne, United Kingdom, and informed consent was granted by the participants. The shared learning exercise took place in the Newcastle upon Tyne Dental Hospital/University Dental School and involved five cohorts of third-year trainee dental technicians and five cohorts of third- and fourth-year undergraduate dental students working together to provide both complete and partial dentures for patients currently receiving treatment in the hospital. One trainee dental technician linked with two third-year dental students in the fabrication of removable complete dentures for a patient, and each fourth-year dental student linked with a single trainee dental technician in the fabrication of removable partial dentures for a patient (Figure 1). A total of 25 trainee dental technicians (five in each year of the study) and 75 dental students (ten third-year and five fourth-year students in each year of the

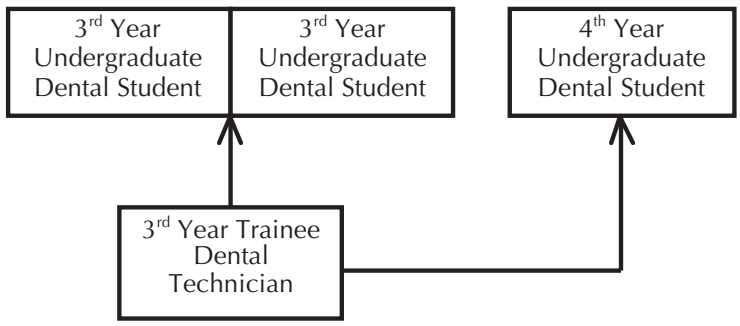

Figure 1. Diagrammatic representation of students involved in the shared learning experience

study) participated for one day each week (October through to April) over five academic years.

To assess the participants' attitudes toward the shared learning experience, we developed a questionnaire modeled on the concepts in the Readiness for Interprofessional Learning Scale (RIPLS).[20] The content and wording of the questionnaire were modified for our study to include questions relating specifically to positive thinking and respect for other health care professionals, role understanding, improved communication among team members and with patients, and the importance of team skills. As well as concepts that the RIPLS measures, it was our intention to assess how confident both groups of students were in terms of their own professional esteem. The questionnaire was piloted to ensure clarity with a small number of trainee dental technicians and undergraduate dental students who had previously been involved in a period of shared learning. The questionnaire included sections covering the following areas: demographic characteristics of respondents, their prior experience in teamworking, teamworking skills, collaborative teamworking, and perceived barriers to and suggestions for more effective teamwork.

A copy of the research questionnaire was given to each student with a brief explanation of the purpose for the research. The students were asked to complete their questionnaires at the end of the shared learning exercise. Initial questionnaires were distributed in April 2008, and the final cohort of students to complete the questionnaire was in April 2013. All questionnaires were answered anonymously. The responses were entered into tables. Analysis was mostly restricted to descriptive statistics with some qualitative abridged responses to questions 13, 17, and 18.

Results

All 100 students completed the questionnaire, for a response rate of 100%. Respondents consisted of 49 males (49%) and 51 females (51%). The average age of the students was 24.25 years (SD=5.56). Out of the 100 respondents, 75 said they had no previous experience of working as part of a multidisciplinary health care team, while 24 said they had (one student skipped this question).

Using a five-point Likert scale ranging from 1=strongly agree to 5=strongly disagree, the students were asked to identify their level of agreement with a range of statements about teamworking skills. There was agreement/strong agreement by most of the respondents with the 12 statements, with less than 6% indicating disagreement with or being unsure about the statement (Table 1). Those respondents who chose unsure or disagree showed a difference in opinion with regard to not understanding each other's role. This lack of understanding resulted in issues relating to communication, such as the ability to share knowledge with other team members, making them feel less motivated and productive as a team and that they had gained little from the exercise.

The students were then asked whether they felt they were valued as part of their team or felt like an outsider. Out of 100 respondents, 97% indicated feeling they were valued as part of their team, and 3% felt they were outsiders. The students were also asked to

Table 1. Students' agreement with survey statements about shared learning experience (N=100)

Statement	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. I think that as a team we worked to a high standard.	0	0	1	50	49
2. Members of the team were respectful of each other's professional expertise.	0	1	1	39	59
3. Members of the team communicated well with each other.	0	0	6	52	42
4. Members of the team had a good understanding of each other's role.	0	3	9	59	29
5. I gained a great deal of relevant knowledge from other team members.	0	0	8	51	41
6. My teamworking skills improved from being part of the team.	0	1	8	59	32
7. I generally liked the members in the team.	0	0	1	31	68
8. I felt I was part of an effective team.	0	1	6	47	46
9. As a group, we were strongly motivated and productive.	0	0	7	52	41
10. I would like to work with my team again in the future.	0	3	2	39	56
11. I have learned more about working in an intraprofessional team.	0	1	3	55	41
12. As a group, we worked as an effective team.	0	0	5	56	39

give a reason for their answer. Individual responses included the following: "I was able to communicate with the patient"; "We were able to discuss treatment options"; "We were able to make group decisions"; "We could ask each other for help and advice"; "We helped each other understand what was possible both clinically and technically to achieve the best result"; "Greater understanding of both the clinical and laboratory processes"; "Learnt new techniques and procedures from one another"; "Felt left out"; "We were able to listen to each other's point of view/ advice"; and "We relied upon each other."

On a five-point scale ranging from 0=not improved at all to 5=improved greatly, the students were asked to rate the extent to which the shared learning exercise had helped their teamworking skills. Among these students, 72% chose 4/5, indicating the experience had improved their teamworking skills; the remaining 28% chose a score of 3 or below. With regard to whether the exercise had improved their confidence in their own professional esteem, the students were asked to rate this on a five-point scale ranging from 0=not improved at all to 5=improved greatly. The levels reported were high: 89% of the students indicated a score of 4/5, with only 11% choosing 3 or below. Next, the students were asked to rate their levels of confidence about working as part of a collaborative team on a five-point scale ranging from 0=not at all confident about skills for working in a team to 5=very confident about skills for working in a team. Levels of confidence reported were high: 95% of the students selected a score of 4/5, with only 5% selecting 3 or below.

Finally, the students were asked to comment about barriers to teamwork in a clinical/laboratory setting and what changes could be made to prepare them more effectively for collaborative teamworking. Their comments on barriers to effective teamwork included the following: "Difficulty interpreting patients' requests"; "Lack of knowledge of other members of the team"; "Did not like to criticize laboratory work"; "Not sure who should be doing what"; and "Differing opinions/ideas could cause conflict." Their comments on changes to prepare them more effectively for teamwork included the following: "More information about what was expected of one another"; "Observing more at an earlier stage"; "More laboratory time/knowledge would be helpful"; "More knowledge of what each other does"; and "Introductory session."

Discussion

This article reports the findings of a survey of attitudes towards shared learning involving undergraduate dental students and trainee dental technicians. The external validity of the findings is limited to the trainee dental technicians and undergraduate dental students in the hospital/university dental school where the study took place. It is also important to acknowledge the comparatively small sample size with regard to the dental technician students, with only 25 taking part over the five-year period. However, it should also be noted that only five students are recruited to the dental technology program each year. It was also not possible to compare the characteristics of respondents who had previously experienced working as part of a multidisciplinary team (25%) with those who had not (75%). In spite of these limitations, the study provides valuable insight into the views of students regarding shared learning. Furthermore, the response rate to the questionnaire was high, with all 100 students responding (response rate of 100%).

The study found agreement/strong agreement amongst many respondents in their responses to the 12 statements regarding teamworking skills. A small percentage (<6%) were unsure about or disagreed with some of the statements, specifically those statements that asked whether members of the team had a good understanding of each other's role and whether their teamworking skills and knowledge gained from other members of their team had improved, enabling them to be productive and work as an effective team. Previous studies have shown that effective shared learning can be undermined by a lack of understanding of one another's roles, limited communication, and poorly coordinated teamwork.[13,21] However, such barriers can be overcome, and students can share these differences and use them constructively in their learning.[22] It is the willingness of a professional to learn about other professional roles that leads to a broadening and enrichment of the knowledge required to collaborate with other team members in providing effective health care.[23] It is also important to understand that the principles of shared learning should encourage students not only to learn with one another but also from and about one another.[24]

Our study also indicated that learning together had the potential to facilitate more positive attitudes towards teamwork and collaboration,[13] finding a posi-

tive association with being valued as an individual in the dental team by all student groups as shown by the number of respondents who agreed or strongly agreed with these statements. As a result, 97% of the students agreed that they felt they were part of a team, giving reasons such as the ability to communicate with the patient, making group decisions, and the opportunity to listen to each other's point of view. By bringing health professions students together in this way, the opportunity arises to enhance patient care as it allows better clinical judgments to be made as individuals question each other more and develop a common knowledge base.[25,26] At the same time, 3% of our respondents indicated feeling like an outsider and not part of their team since they felt left out. Research suggests that learners in unfamiliar environments do experience some reduction in self-confidence and increased anxiety[27] and find the idea of clinical experience intimidating.[28] Several studies concur with the need to provide feedback, particularly positive reinforcement to support student confidence in unfamiliar situations.[29-31]

The survey we used also found that the majority of respondents gained in confidence and self-esteem as a result of the exercise. One of the benefits to shared learning is increased personal and professional confidence, which ultimately results in enhanced job satisfaction.[32] This increase in confidence enhances an individual's recognition of the contributions of others.[33] Many of the comments relating to whether there were any barriers to learning revolved around a lack of knowledge of each other's role and concerns about differing opinions and criticism of work that might have caused conflict between team members. Research suggests that each person involved in collaborative practice must accept and try to understand others' opinions and feelings and not automatically dismiss them because one does not understand or agree or the opinions do not fit with one's own view.[34] Comments received as to how the exercise might be improved included an introductory session to explain in more detail what is expected of one another during the exercise.

Overall, in this study the students' attitudes about the shared learning exercise were positive. Most students recognized the benefits of shared learning and that the acquisition of teamworking skills is useful for their future working lives, beneficial to the care of their patients, and likely to enhance professional working relationships.[7,8,13] Reasons for this were that both groups of students had the opportunity to develop their own professional role: for example, the trainee dental technicians became more involved in the care of the patient, and both groups learned about the other profession and how to work as part of a team. Therefore, our study may assist future developments in institutions considering use of shared learning.

Such shared learning might consider which year groups should be linked, when is the best time for such linkage, and for how long a period of time should it be carried out. This type of shared learning could also benefit other allied oral health care professionals, such as dental hygiene or dental assisting students. It is important that dental educators learn more about and then engage in debate on the potential and value of shared learning for their institutions. Consequently, the timing, learning methods, and length of the program should be adapted according to the specific needs of students. Further consideration needs to be given to the format of such collaboration, its timing and place in the dental curriculum, and the degree to which it becomes a regular and integral part of the program.

Conclusion

Within the limitations of this study and based on the views of the trainee dental technicians and undergraduate dental students who took part in it, the findings provide an insight into the attitudes of both groups of students as they endeavor to participate in shared learning. The study found that both trainee dental technicians and undergraduate dental students believed there were benefits to engaging in a program of shared learning. This involved developing more effective approaches to teamwork and overcoming the difficulties associated with collaborative working. The students also reported increased understanding of the knowledge, skills, roles, and duties of the other profession. Considering the positive responses from the students in this study, we anticipate that the exercise may be extended to the fixed restorative curriculum.

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