

Abstract

Objective: Educate nursing and dental hygiene (DH) students on the oral ramifications of cancer therapies and the importance of oral health during treatment using an interprofessional, case-based approach. To evaluate changes in knowledge, confidence, and willingness to provide screening, counseling, and referrals for patients undergoing cancer therapy. **Methods:** Pilot study utilizing mixed methods design included all first-year DH and accelerated nursing (ABS/N) students at the University of North Carolina at Chapel Hill (UNC). Data was collected using baseline and post-intervention surveys, and debriefing session. Students received a presentation regarding oral considerations and provision of screening, counseling, and referral for cancer patients. A control group (16 ABS/N, 8 DH) students were asked to complete an immediate post-survey; remaining students were organized into small, mixed groups and reviewed an unfolding case study, followed with post-survey completion and inclusive debriefing session. Fisher's Exact Test, Mantel-Haenszel, Chi-Square, and Coefficient tests were used. **Results:** 93 matched surveys were completed (61 ABS/N, 31 DH). Baseline surveys revealed 82% (n=76) indicated no knowledge to complete oral health screenings, 68% (n=63) counseling, or 65% (n=60) referral; post-survey results denoted positive changes to knowledge in screening (72%, n=67), counseling (81%, n=75) and referral (89%, n=83). Baseline confidence assessment revealed 22% (n=20) had confidence to complete oral screening, 25% (n=23) for counseling, and 47% (n=44) for referral. Post survey results showed confidence increases to screen (75%, n=70), counsel (83%, n=77), and refer (91%, n=82). Baseline and post-intervention levels of willingness to screen, counsel, and refer were high. Results revealed 96% (n=92) had willingness to collaborate with other healthcare professions and 99% (n=92) agreed shared learning would help them become a more effective team member. **Conclusions:** Educating students in an interprofessional collaborative learning environment can increase their knowledge, confidence, and willness to provide screenings, counseling and referrals for patients undergoing cancer therapies. Student responses indicate a willingness and desire to collaborate with other disciplines to enhance patient care.

Rationale

Cancer treatment can produce detrimental oral effects impacting overall cancer therapy.¹ Complications can be so debilitating that reducing, postponing, or discontinuing treatment becomes necessary and leads to poorer prognosis. Medically necessary oral care before, during, and after cancer treatment can prevent/reduce the incidence and severity of oral complications, enhancing both patient survival and quality of life. Often, oral health is not a priority for cancer patients undergoing therapy.² Studies have shown that patients' cognizance of potential side effects prior to treatment, education on how to manage side effects, and using oral care practices during oncology treatments, greatly reduce the occurrences of oral complications.³ Nurses and dental hygienists (DH) are part of the primary care team that may manage patients undergoing cancer treatment and can provide screening, counseling and referrals when oral complications occur.



Methods and Materials

The study was granted IRB exemption (#18-0279) by the Institutional Review Board and the University of North Carolina at Chapel Hill.

Participants

Participants of the study consisted of 36 first year dental hygiene (DH) students and 64 first year Accelerated Bachelor of Science Nursing (ABS/N) students.

Materials

- Pre-and Post-Surveys.** A pre- and post-survey design was used to collect descriptive and quantitative data, to evaluate participants' knowledge, confidence, and willingness to provide oral screening, counseling, and referrals.
- Pre-Survey** included 24 questions: four demographic, five true/false questions to evaluate knowledge, three opinion questions, three confidence questions, four willingness questions, five IPE related questions and one pertaining to previous IPE experience. Following pre-survey completion, all students received a presentation regarding oral considerations for cancer patients and ramifications of cancer therapies.
- Post-intervention survey** included pre-intervention questions and 3 open-ended questions.
- Intervention.** Content provided in the presentation, "Oral Care in the Cancer Patient" was a part of course requirements for both student groups (DHYG 267: Dental Hygiene Theory for the dental hygiene students, and NURS 366: Health Assessment for the nursing students). The presentation was created and given by Dr. Katharine Ciarrocca, a dental faculty member in the UNC School of Dentistry. The presentation contained information on types of cancer treatments, common cancer complications seen among individuals receiving treatment, along with potential treatment aids for common side effects, and detailed photographic descriptions.
- Unfolding Case Study.** A fictitious case was developed by an interdisciplinary team, which contained nurse practitioners, dental hygienists and a dentist and pharmacist. Students used this case study to review and discuss.
 - 20 A-BSN students and 15 DH students were randomly selected from the class roster and assigned to be the control group for the study. A control group was utilized to determine whether the small group case study was beneficial to the students for the IPE experience or if the intervention (lecture) was the only significant part of the study.
 - The remaining 44 nursing students and 21 dental hygiene students were assigned to be the intervention group. These students were then randomly assigned to mixed small groups, composed of ten students each. The control group participants were asked to complete the post-survey immediately following the presentation. The intervention group were instructed to review the case study and work to answer ten questions. Queries posed from the case-study asked about medication, potential complications, potential treatment options for care, and referral practices.
 - The small groups reviewed the case study, discussed their interpretations of data presented, prioritized strategies to address the issues proposed, and reached consensus about the best way to respond to the case.
 - All participating students were then asked to gather in the classroom for a debriefing session which focused on their experiences working as interprofessional learners to address the unfolding case. The lead investigator proposed three questions to initiate discussion and feedback amongst the students. This debriefing session was audio recorded and facilitated by the principal investigator of the project.

Data

Table 1. Comparison of baseline and post-intervention survey responses for questions rating knowledge, confidence and willingness.

Variable	Group	Baseline Survey Data		Post-Intervention Data		
		No	Yes	No	Yes	
Knowledge	Screen	Control	91.7% (n=22)	8.3% (n=2)	20.8% (n=5)	79.2% (n=19)
		Intervention	78.3% (n=55)	21.7% (n=15)	30.4% (n=21)	69.6% (n=48)
	Counsel	Control	62.5% (n=15)	37.5% (n=9)	25.0% (n=6)	75.0% (n=18)
		Intervention	69.6% (n=48)	30.4% (n=21)	17.4% (n=12)	82.6% (n=57)
Confidence	Screen	Control	66.7% (n=16)	33.3% (n=8)	4.2% (n=1)	95.8% (n=23)
		Intervention	63.8% (n=44)	36.2% (n=25)	13.0% (n=9)	87.0% (n=60)
	Counsel	Control	87.5% (n=21)	12.5% (n=3)	25.0% (n=6)	75.0% (n=18)
		Intervention	75.4% (n=52)	24.6% (n=17)	24.6% (n=17)	75.4% (n=52)
Willingness	Screen	Control	79.2% (n=19)	20.8% (n=5)	20.8% (n=5)	79.2% (n=19)
		Intervention	73.9% (n=51)	26.1% (n=18)	15.9% (n=11)	84.1% (n=58)
	Counsel	Control	62.5% (n=15)	37.5% (n=9)	0.0% (n=0)	100.0% (n=24)
		Intervention	49.3% (n=34)	50.7% (n=35)	11.6% (n=8)	88.4% (n=61)
Willingness	Screen	Willin:		Willin:		
		Control	12.5% (n=3)	20.8% (n=5)	4.2% (n=1)	8.3% (n=2)
		Intervention	5.8% (n=4)	15.9% (n=11)	1.5% (n=1)	8.7% (n=6)
		Control	4.2% (n=1)	33.3% (n=8)	0.0% (n=0)	20.8% (n=5)
	Counsel	Control	5.8% (n=4)	11.6% (n=8)	1.5% (n=1)	8.7% (n=6)
		Intervention	5.8% (n=4)	11.6% (n=8)	1.5% (n=1)	8.7% (n=6)
		Control	4.4% (n=1)	4.4% (n=1)	0.0% (n=0)	0.0% (n=0)
		Intervention	0.0% (n=0)	11.6% (n=8)	1.5% (n=1)	5.8% (n=4)

Table 2. Dental Hygiene and Nursing student responses to shared learning and IPE activity questions

Statement	Group	Pre-Survey Data		Post-Intervention Data	
		Disagree	Agree	Disagree	Agree
Shared learning with other disciplines would increase my ability to understand clinical problems.	Control	0.0% (n=0)	100.0% (n=24)	4.2% (n=1)	95.8% (n=23)
	Intervention	1.4% (n=1)	98.6% (n=68)	0.0% (n=0)	100.0% (n=69)
Shared learning with other health care disciplines would help me become a more effective member of a health care team.	Control	0.0% (n=0)	100.0% (n=24)	4.2% (n=1)	95.8% (n=23)
	Intervention	1.4% (n=1)	98.6% (n=68)	0.0% (n=0)	100.0% (n=69)
Shared learning would help me to think positively about other health care professionals.	Control	4.2% (n=1)	95.8% (n=23)	4.2% (n=1)	95.8% (n=23)
	Intervention	2.9% (n=2)	97.1% (n=67)	0.0% (n=0)	100.0% (n=69)
I want to have the opportunity to learn with health care students from other disciplines.	Control	0.0% (n=0)	100.0% (n=24)	4.2% (n=1)	95.8% (n=23)
	Intervention	2.9% (n=2)	97.1% (n=67)	1.4% (n=1)	98.6% (n=68)
Based on my participation in IPE activities and/or clinical practice I have gained more realistic expectations of other professionals on a team.	Control	12.5% (n=3)	88.3% (n=14)	4.2% (n=1)	91.7% (n=22)
	Intervention	11.6% (n=8)	82.3% (n=43)	1.4% (n=1)	97.1% (n=67)
Based on my participation in IPE activities and/or clinical practice I have gained an enhanced awareness of the roles of other professionals on a team.	Control	8.3% (n=2)	91.7% (n=14)	4.2% (n=1)	91.7% (n=22)
	Intervention	10.1% (n=7)	89.9% (n=44)	1.4% (n=1)	97.1% (n=67)
Based on my participation in IPE activities and/or clinical practice I have gained an appreciation for the benefits in interprofessional team work.	Control	4.2% (n=1)	95.8% (n=14)	4.2% (n=1)	95.8% (n=23)
	Intervention	1.4% (n=1)	98.6% (n=49)	1.4% (n=1)	97.1% (n=67)

Significance/Relevance

Nurses and DHs are often first line health care professionals managing patients' acute needs. There is a paucity of education regarding oral ramifications of cancer therapy in both nursing and DH curriculums. Interprofessional learning environments can enhance knowledge, confidence, and willingness to provide care and referral for patients undergoing cancer therapy to improve outcomes. This pilot project demonstrates the benefit of team-based learning.



Future Directions

Spring 2019: This pilot program will be expanded to include all second year dental students, all first year dental hygiene students and first year accelerated nursing students learning together in an interprofessional collaborative environment.

References

- Mowat S, Hein C, Walsh T, MacDonald L, Grymonpre R, Sisler J. Changing Health Professionals' Attitudes and Practice Behaviors Through Interprofessional Continuing Education in Oral-Systemic Health. *J Dent Educ* 2017;81(12):1423-9.
- Honor A, Law A. Mouth care in cancer nursing: using an audit to change practice. *Br J Nurs* 2002;11(16):1087-96.
- Barker GJ, Epstein JB, Williams KB, Gorsky M, Raber-Durlacher JE. Current practice and knowledge of oral care for cancer patients: a survey of supportive health care providers. *Support Care Cancer* 2005;13(1):32-41.