Research

Exploring Students' Compassion Outcomes within a Dental School's Tobacco Treatment Training Program: A pilot study

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ABSTRACT

Purpose   It has been suggested that compassion may decrease as students progress through their health care education and into clinical practice. The purpose of this pilot study was to determine whether an immersive curriculum thread of tobacco use disorder (TUD) cessation methodology, including behavioral techniques and communication skills, was associated with any change in dental hygiene and dental students perceived levels of compassion.

Methods   Dental hygiene (DH) and dental (DS) students (n=300) who had experienced an immersive TUD curriculum from West Virginia University were invited to complete the Sussex-Oxford Compassion Scale-Toward Others (SOC-O) online survey during the academic years 2022-2023. Possible scores on the SOC-O ranged from 20 (no or low compassion) to 100 (high compassion). The SOC-O scores for students who did not have clinical experience and limited TUD content (first- and second-year DH and DS students) were compared with SOC-O scores of students who had clinically applied the immersive tobacco cessation curriculum thread (third and fourth year DH and DS students) using t-tests.

Results   A total of seventy DH and DS students completed the SOC-O survey for a response rate of 23.3%. The overall mean SOC-O score was 83.0 for participants who lacked clinical experience (DH1, DH2, DS1, DS2) and 85.8 for participants with clinical experience using the TUD content (DH3, DH4, DS3, DS4) ($p > 0.05$). For the SOC-O subscale analysis, both groups were similar in the recognition of suffering, universality of suffering, empathy/compassion for a person suffering, tolerance of uncomfortable feelings, and action/motivation to act to alleviate suffering.

Conclusion   A high level of perceived compassion among dental hygiene and dental students was associated with an immersive behavioral sciences curriculum thread for the assessment/treatment of TUD. Perceived levels of compassion were maintained for participants with and without clinical experience. Additional focus on compassion philosophy research within educational methodology is needed to maintain and improve compassion outcomes in the health care professions.

Keywords   dental education, dental hygiene education, tobacco use disorder, behavioral sciences, compassion

NDHRA priority area, **Professional development: Education** (educational models).

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INTRODUCTION

Tobacco use disorder (TUD) cessation methodology has been developed to assist health care professionals provide information and support to clients with TUD. In previous studies, many TUD clients reported having made thirty or more unsuccessful quit attempts and, as a result of the lack of success, experienced nicotine withdrawal symptoms, insomnia, stress, frustration, anxiety and/or depression.[1,2,3] Participants in TUD cessation programs have reported difficulty in overcoming nicotine addiction withdrawal symptoms of negativity, frustration, and stress along with environmental/social triggers to use tobacco products cause relapse.[2]

The American Dental Hygienists' Association (ADHA) and the American Dental Association (ADA) have recognized the systemic and oral health implications of TUD and encouraged dental teams to consistently identify tobacco use, employ ask/advise strategies to assist clients in quitting, and to offer tobacco use cessation treatment recommendations in a professional, compassionate manner.[4] Many health care professionals routinely ask and advise patients regarding TUD cessation. However, many providers are not prepared to work professionally and compassionately with the emotions and feelings associated with TUD cessation and lack familiarity with the myriad TUD cessation methodologies.[5]

In response to the need for a more comprehensive TUD education, a Certified Tobacco Treatment Training Program (TTTP) was created at West Virginia University (WVU).[6] A goal of the program was to provide dental hygiene (DH) and dental (DS) students with knowledge regarding the harms of tobacco and evidence-based pharmacological interventions for TUD cessation, and to teach short, supportive, behavioral interventions that could not only be used for TUD, but were appropriate for other patient behavioral change encounters.[6] Dental and DH students received twenty-four hours of TUD curricular content and then demonstrated clinical competency by assessing/treating clients who had TUD. Students created a portfolio with presentations of various TUD

client encounters and tobacco cessation strategies. Students attended an eight-hour interprofessional tobacco treatment training review seminar that included key concepts such as the impact of TUD, nicotine addiction, FDA approved pharmacotherapy, behavioral strategies, and case studies addressing tobacco treatment planning and relapse prevention among diverse populations. Lastly, students completed a comprehensive examination on TUD to an 80% competency score or were remediated to attain that level of skill. Students who have successfully completed the TUD curricular content may apply to receive the tobacco treatment specialist (TTS) certificate at graduation.

In response to the need to demonstrate application of didactic tobacco competency content, breakout and practice sessions were also employed as part of the curriculum. Students developed communication, interviewing and assessment skills during TUD simulations using Motivational Interviewing (MI) concepts. Motivational interviewing, a client-centered counseling style, was taught to the DH and DS students to use as a method to guide clients to explore and resolve their feelings, emotions, and ambivalence when making a behavior change. Motivational interviewing uses brief interactions to strengthen a person's existing motivation to change a behavior.[7] As part of the integrated TTTP curriculum at WVU, principles of MI were taught in both online and in-person lectures, and through the use of case studies and role-playing simulation exercises. Some of the MI skills included, asking open-ended questions, providing affirmations and reflections, providing summaries of ambivalent feelings and emotions, and practicing requesting permission to provide additional information. The case studies involved practicing the MI processes of engagement (demonstrating trust/respect), focusing on a goal, evoking ambivalence/motivation to change, and formulating a plan. Students learned the MI foundational aspects of respect, autonomy, empathy, and compassion. While these foundational principles existed in the context of the

TTTP curriculum, they were taught in other courses involving patient care content. Within MI, student compassion has been recognized as a key feature.[7] Tobacco use disorder has remained a significant public health concern despite continuous efforts to dissuade its use and intercede with tobacco cessation. Academic administrators at the university determined this integrated TTTP program had the potential to improve student practitioners' knowledge, skill and confidence with evidence-based tobacco cessation. It may also serve to develop compassionate health care professionals.[8]

Additional innovative didactic experiences in the program were related to skill development and strengthening of professionalism, wellness, and academic achievement. These experiences were introduced in consideration of the transtheoretical model of behavior change. DH and DS students were asked to consider each stage of change (precontemplation, contemplation, preparation, action, maintenance) and the expression of compassion was part of the evaluation process.[9]

Clinically, the students used the school's electronic health record tobacco assessment questionnaire to assess the clients' importance of tobacco use and confidence to cease with the MI readiness ruler (on a 0-10 point scale). With the client, students explored the discrepancy between the desire to use tobacco and the desire to quit. The students also determined their clients' nicotine dependence level with either the Fagerstrom nicotine dependence Index for smoked or smokeless tobacco or the Penn State Electronic Cigarette Dependence Index. The transtheoretical stage of change model was used to guide the client toward tobacco cessation. Once the client reached the preparation stage of change, students discussed options of appropriate FDA approved pharmacotherapy and behavioral counseling.

Client involvement in these choices enhanced self-efficacy and respected autonomy in the quit process. Students encouraged combining pharmacotherapy and behavioral counseling as tobacco use abstinence rates doubled with such combinations in evidence-based studies.[10] Students re-assessed tobacco use abstinence at every recall/recare appointments and congratulated those who remained tobacco-free and compassionately addressed relapse by re-directing the client back to a tobacco-free lifestyle.

There has been limited research in the empirical understanding of compassion in health care; especially as it relates to evidence-based interventions or training programs.[11,12] Compassion fatigue, burnout, and alcohol use have been reported among dental hygienists in the United States (US), United Kingdom (UK), Canada and South Africa.[13] In a study of dental hygienists in the US, high levels of compassion fatigue and burnout were reported and approximately 70% of respondents were considering leaving the profession within the next five years.[14] Continuous use of ineffective communication skills, compassion fatigue, and burnout have been identified as contributors to reductions in the health care workforce and to patient dissatisfaction with health outcomes. Researchers have indicated that compassion not only improves client outcomes, but it also improves health care providers' overall well-being.[15] Empathy training in dental education has been shown to be beneficial for both clients and students.[16]

One of the goals of the WVU TTTP was to determine whether the experience of the curricular integration of TUD training program was associated with increased levels of compassion among the health care professional student participants. The purpose of this pilot study was to determine whether an immersive curriculum thread of TUD cessation methodologies, including behavioral techniques and communication skills, was associated with changes in dental hygiene and dental students' perceived levels of compassion.

METHODS

This cross-sectional design study received WVU Institutional Review Board (IRB) approval (2303746606). Participants were recruited through a verbal and/or email invitation to respond to an online survey to assess their perceived compassion using a standardized scale. Interested participants were directed to a link with the cover letter describing the

study. After agreeing to the informed consent request, an anonymous survey was presented. One week later, all students received an email reminder to participate and complete the survey. The surveys were distributed during the 2022-2023 academic years.

The specific content of the curriculum included evidence-based treatment and behavioral strategies taught utilizing lectures, role-playing, and case studies to apply during clinical sessions with TUD clients. The required tobacco competency content was derived from WVU TTTP and taught throughout the dental and dental hygiene students' 4-year curricula by various faculty who held TTS certificates or a National Certificate in Tobacco Treatment Practice. Prior to the TTS certification examination through the WVU TTTP, students were required to participate in an inter-professional 8-hour review seminar with students in the WVU pharmacy, physician assistant programs and another dental hygiene program not affiliated with WVU.

Participants

Inclusion criteria for participation were dental students (DS) in their first, second, third and fourth year (DS1, DS2, DS3, DS4) and dental hygiene (DH) students in their first, second, third and fourth year (DH1, DH2, DH3, DH4); all participants were in attendance during the 2022-2023 academic years.

Instrument

The publicly available, validated, Sussex-Oxford Compassion Scale-Toward Others (SOC-O) was selected as the survey instrument.[17] The SOC-O had 20 items using the following 5-point Likert response scale: not at all (scored as 1), rarely true (scored as 2), sometimes true (scored as 3), often true (scored as 4), or always true (scored as 5). Overall, SOC-O scores varied from 20 (no/very low compassion) to 100 (high compassion). The SOC-O subscales were also included in the instrument; each subscale had 4 SOC-O questions and a potential score from 4 to 20. The "recognizing suffering" subscale was validated with SOC-O questions 1, 6, 11, 16. The understanding universality of suffering subscale was validated with questions 2, 7, 12, 17 and the "feeling for a person

suffering" subscale was validated with questions 3, 8, 13, 18. The "tolerating uncomfortable feelings" subscale was validated with questions 4, 9, 14, 19 and the "acting or being motivated to act to alleviate suffering" subscale was validated with questions 5, 10, 15, 20. Specific survey questions are shown in Table I.

Additional variables included the status of the students in terms of progress through the curriculum: no clinical experience and limited TUD content (DH1, DH2, DS1, DS2), clinical experience and immersive TUD content (DH3, DH4, DS3, DS4), curriculum completion and certification testing (yes, no), number of patients treated for TUD (0, ≥1), and participant gender (male, female).

Data statement

The Research Electronic Data Capture system (REDCAP) was used to capture and maintain data for the study. REDCAP is a secure, web-based software platform designed to collect, validate, track and export data, provide statistical analysis, data integration and interoperability with external sources.[18,19] No identifiable data were collected with the survey. Data from this study are available upon request to West Virginia University's REDCAP administrator.

Data analysis

The collected data were analyzed for descriptive statistics (frequencies, means, and standard deviations) to detail student self-reported compassion using the SOC-O scales. Statistical analyses were completed with a software program (SPSS, version 26; IBM, Armonk, NY, USA). As both the DS and DH students had the same competency requirements for the TTS certificate, t-tests were used to compare scores of all students who lacked clinical experience with all students who were clinically applying tobacco cessation content. *A priori,* a significance level of $p < 0.05$ was set.

RESULTS

Of the 200 dental students (DS) and 100 dental hygiene students (DH) enrolled at the university, a total of 70 students (DS n=31, 13.5%; DH n=39, 39.0%) participated in this study for an overall response rate of

Table I. Participant responses on the Sussex-Oxford Compassion Questionnaire[17] (n=70)[†]

Question #	Category	Not at all True/ Rarely True n (%)	Sometimes True n (%)	Often True n (%)	Always True n (%)
1.	I recognize when other people are feeling distressed without them having to tell me	—	19 (27.5)	41 (59.4)	9 (13.0)
2.	I understand that everyone experiences suffering at some point in their life	—	2 (2.9)	17 (24.3)	51 (72.9)
3.	When someone is going through a difficult time, I feel kindly towards them	—	1 (1.4)	34 (48.6)	35 (50.0)
4.	When someone is upset, I try to stay open to their feelings rather than avoid them	1 (1.4) (Not at all true)	11 (15.7)	36 (51.4)	22 (31.4)
5.	When others are struggling, I try to do things that would be helpful	—	2 (2.9)	39 (55.7)	29 (41.4)
6.	I notice when others are feeling distressed	—	11 (15.7)	49 (70.0)	10 (14.3)
7.	I understand that feeling upset at times is part of human nature	—	—	20 (28.6)	50 (71.4)
8.	When I hear about bad things happening to other people, I feel concern for their wellbeing	—	3 (4.3)	35 (50.0)	32 (45.7)
9.	I stay with and listen to other people when they're upset even if it's hard to bear	2 (2.9) (rarely true)	10 (14.3)	33 (47.1)	25 (35.7)
10.	When someone is going through a difficult time, I try to look after them	2 (2.9) (rarely true)	7 (10.0)	41 (58.6)	20 (26.8)
11.	I'm quick to notice early signs of distress in others	6 (8.6) (rarely true)	21 (30.0)	33 (47.1)	10 (14.3)
12.	Like me, I know other people also experience struggles in life	—	2 (2.9)	26 (37.7)	41 (59.4)
13.	When someone is upset, I try to tune in to how they're feeling	2 (2.9) (rarely true)	6 (8.6)	39 (55.7)	23 (32.9)
14.	I connect with the suffering of others without judging them	2 (2.9) (rarely true)	8 (11.4)	40 (57.1)	20 (28.6)
15.	When I see someone in need, I try to do what's best for them	1 (1.4) (rarely true)	5 (7.1)	37 (52.9)	27 (38.6)
16.	I recognize signs of suffering in other	1 (1.4) (rarely true)	13 (18.6)	41 (58.6)	15 (21.5)
17.	I know that we can all feel upset at times when we are wronged	—	1 (1.4)	31 (44.3)	38 (54.3)
18.	I'm sensitive to other people's distress	4 (5.8) (rarely true)	9 (13.0)	39 (56.5)	17 (24.6)
19.	When someone else is upset, I can be there for them without feeling overwhelmed by their distress	3 (4.3) (rarely true)	15 (21.7)	37 (53.6)	14 (20.3)
20.	When I see that someone is upset, I do my best to take care of them	1 (1.4) (rarely true)	8 (11.4)	40 (57.1)	21 (30.0)

[†]Recognizing Suffering subscale was validated with SOC-O questions 1, 6, 11, 16.
Understanding universality of suffering subscale was validated with questions 2, 7, 12, 17.
Feeling for a person suffering subscale was validated with questions 3, 8, 13, 18.
Tolerating uncomfortable feelings subscale was validated with questions 4, 9, 14, 19.
Acting or being motivated to act to alleviate suffering subscale was validated with questions 5, 10, 15, 20.

Table II. Group comparisons of responses on the Sussex-Oxford Compassion and Subscales[17] (n=70)

	Total SOC-O Score		Recognizing Suffering		Understanding Universality of Suffering		Feeling for Person Suffering		Tolerating Uncomfortable Feelings		Acting or being Motivated to Act to Alleviate Suffering	
	% (SD)	p-value	% (SD)	p-value	% (SD)	p-value	% (SD)	p-value	% (SD)	p-value	% (SD)	p-value
All participants	84.5 (8.2)		15.5 (2.2)		18.2 (2.6)		17.0 (2.1)		16.2 (2.3)		17.0 (2.1)	
Program		<.05		<.05		<.05		<.05		<.05		<.05
DS1, DS2, DH1, and DH2 (no clinical application)	83.0 (8.2)		15.1 (2.3)		18.2 (1.6)		16.5 (2.0)		15.7 (2.3)		16.6 (2.2)	
DS3, DS4, DH3, and DH4 (clinical application)	85.8 (8.0)		15.8 (2.1)		18.3 (3.2)		17.5 (2.1)		16.6 (2.2)		17.3 (2.1)	
Gender		<.05		<.05		<.05		<.05		<.05		<.05
Male	82.1 (8.7)		14.9 (2.7)		18.1 (1.6)		16.1 (2.0)		15.5 (2.3)		16.1 (2.1)	
Female	85.6 (7.8)		15.7 (2.0)		18.3 (3.0)		17.4 (2.0)		16.5 (2.3)		17.4 (2.0)	
Completed tobacco certification education and testing		<.05		<.05		<.05		<.05		<.05		<.05
Yes	81.8 (13.0)		14.8 (3.5)		17.2 (5.0)		16.5 (3.0)		15.6 (3.1)		16.7 (3.1)	
No	85.5 (6.7)		15.7 (1.9)		18.7 (1.6)		17.1 (1.9)		16.4 (2.1)		17.0 (1.9)	
Number of patients treated for tobacco use disorder		<.05		<.05		<.05		<.05		<.05		<.05
None	85.5 (6.8)		15.7 (1.9)		18.6 (1.6)		17.1 (1.9)		16.3 (2.1)		17.0 (1.9)	
≥1	82.8 (10.2)		15.0 (2.7)		17.5 (3.8)		16.8 (2.4)		16.1 (2.7)		16.8 (2.5)	

Note: SD = standard deviation

23.3%. The distribution of participants by class and year was as follows: DS1 (n=19), DS2 (n=4), DS3 (n=4), DS4 (n=4), DH1 (n=13), DH2 (n=9), DH3 (n=11), DH4 (n=6). There were 49 (70%) females and 21 (30%) males.

More than half of the respondents (72.5%, n=50) reported that they had not completed all aspects of the TTTP curricular integration as they were too early in their respective programs. Some of the respondents (11.6%, n=8) participated in the TTTP in 2022, while 15.9% (n=11) participated in the TTTP in 2023. Nearly two-thirds (65.7%, n=46) reported not having treated a client who used tobacco; less than one-fourth (20.0%, n=14) reported having treated 1 or 2 clients for TUD; only 7.1% (n=5) treated 3 or 4 clients for TUD, and 7.1% (n=5) had treated 5 or more clients. The SOC items and response distributions are shown in Table I.

Comparisons of participants who completed the TUD component of the behavioral sciences curriculum thread to participants who had not competed the curriculum are shown in Table II. There were no significant differences between any of the groups in SOC scores or in the subscales. This included differences by gender, DH versus DS students, completion level in the TTTP curricular integration, and whether participants had worked with clients with TUD. The overall compassion scale score for all participants was 84.5 (SD, 8.2). Each of the subscales had a maximum of 20 points. The highest subscale was for the understanding of the universality of suffering (18.2%, SD=2.6). The lowest subscale was for recognizing suffering (15.5%, SD=2.2). It should be noted, that although not significant, there was a slightly higher compassion score for participants with clinical experience (DH3, DH4, DS3, DS4).

DISCUSSION

The purpose of this pilot study was to determine whether an immersive curriculum thread of tobacco cessation methodology using evidence-based pharmacotherapy and MI techniques was associated with dental hygiene and dental students' perceived compassion levels. The principles of MI, which have foundations in autonomy, empathy, and compassion, were taught through the WVU TTTP curricular integration. Although it has been reported that there is a tendency for compassion to decrease over health care students' educational tenure, there were no significant differences in perceived levels of compassion among the participants in this study.

Oral health care professionals have been charged with responding to oral-systemic disease connections dating back to the Surgeon General's Report on Oral Health in America issued in 2000 when oral health was identified as being integral to general health.[20] More recently, Gajendra et al. underscored the duty that dental health care providers have in preventing and managing tobacco dependence.[21]

In response to these challenges, WVU became the first dental school in the US to create a tobacco treatment training program and integrated the TUD curricular content into four of the WVU Health Sciences Center professional programs.[6] This interprofessional program has required continuous quality evaluation and the opportunity to examine how skills in TUD can also be applied to other aspects of the health care education curriculum. Preparing a compassionate health care workforce is critical. The American Dental Association Principles of Ethics and Code of Professional Conduct states that compassion (among other ethical characteristics) should be an integral component of dental education.[22] Compassionate care is not only a patient right, but has been associated with improved health outcomes,[23] as well as the overall well-being of the health care provider.[15]

In this study, the overall SOC-O score was 84.2 (SD 8.2) for all participants, a relatively high compassion score. There were no significant differences between the groups of students early in the curriculum without clinical experience and those in later curricular years. These findings were similar to an international study in which empathy was part of the dental school curriculum. Dental students in Chile who received consistent formative and summative feedback regarding empathy had an overall score of 82.1% (Jefferson Scale of Empathy).[16] In another study using the Jefferson Scale of Empathy, first year dental

students in the US scored significantly higher (125/130; 96%) in empathy than in any other year in the dental program.[23] Participants in that study demonstrated a pattern of an initial increase, followed by a decline, then an increase, and finally stabilization of empathy levels.[23] In the current study, the slightly higher levels of compassion demonstrated by the third and fourth year dental hygiene and dental students may have been enhanced or increased due to learning and applying the MI skills that value compassion.

There is a need to emphasize compassion education for better client health outcomes as well as the overall health and well-being of the future health care providers. This was a pilot study to examine the perceived levels of compassion within dental and dental hygiene curricula. While the main goals for the integration of the TUD training into dental hygiene and dental curricula were to increase students' knowledge, skills and practices related to tobacco use and cessation strategies, the benefits of learning MI skills could also be transferred into other patient and personal applications. Compassion is an integral MI component especially during TUD treatment. Quitting tobacco often requires a number of attempts due to overwhelming cravings related to nicotine addiction and behavioral cues which trigger relapse; successful counseling requires a compassionate approach. By learning MI techniques, these skills may be transferred to working with dental clients who have other behavioral issues that may require change such as diet/nutrition selections, daily oral hygiene habits and routine preventive dental care. More research focusing on compassion philosophies within educational programs is needed for improved health outcomes.

Strengths and Limitations

Strengths of this study include the use of a validated instrument, the SOCS-O to measure one's compassion toward others. The subscales of the instrument were insightful for the types of compassion demonstrated by the participants. As this was a cross-sectional study design, causality cannot be inferred. Study participants came from the dental programs at one university limiting the generalization of the results.

This research took place while COVID restrictions were still in place for course instruction and students received a portion of the TUD curriculum online. The impact of virtual and asynchronous delivery modalities was not evaluated in this study.

CONCLUSION

Results from this study demonstrated that dental and dental hygiene students had high levels of perceived compassion throughout the immersive TUD behavioral sciences curriculum. No significant differences in perceived compassion levels were found in this student population based on levels of clinical experience. Additional focus on compassion research within educational methodology is needed to maintain and improve compassion outcomes in the health care professions.

DISCLOSURES

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