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# Dental Students' Readiness to Address Adolescent Risk Behaviors: A Pilot Study

Edna Perez, Leda Regina Fernandes Mugayar, Yu Su, Jasdeep Guram, Sukhi Guram, Linda S. Behar-Horenstein

**Abstract:** Adolescents' engagement in risk-taking behaviors is well documented. However, the role of the dental practitioner in helping teenage patients understand and avert those behaviors is relatively unknown. The aim of this pilot study was to assess dental students' familiarity with adolescent risk behaviors, comfort level in discussing adolescent risk behaviors with teenage patients, and ratings of the relevance of these topics in dental education. Of the 373 University of Florida dental students across all four years who were invited to participate in 2017, 151 (40.5%) completed the survey. Among these respondents, 66% were female, 53% were from an underrepresented minority (URM) group, 40% were above the age of 25, 53% were in their preclinical years of education, and 47% were in their clinical years. In the results, the males had higher levels of comfort discussing adolescent risk behavior topics than the females, and the non-URM students had higher levels of comfort than the URM students. The clinical students showed statistically significant higher levels of comfort and ratings of the relevance of adolescent risk behaviors than the preclinical students. This pilot study assessed these students' comfort in discussing adolescent risk behaviors with patients and their level of agreement about the relevance of those topics in dental education across groups (age, gender, minority status, and educational level). Future studies are needed to examine pre- and posttest changes following interventions aimed at enhancing students' knowledge and comfort in discussing adolescent risk behaviors.

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Adolescence is characterized by physical, psychological, and social change.<sup>1,2</sup> During this time, teenagers often carry an “imaginary audience” and believe that everyone notices everything that they do or wear. Adolescence is marked by identity development, as teenagers attempt to find out who they are and what values they want to adopt.<sup>3</sup> During adolescence, as individuals attain more freedom from immediate parental supervision, they exert increasing levels of independence in choosing friends, clothes, habits, foods, and more.<sup>1</sup> Simultaneously, opportunities to participate in negative risk behaviors increase substantially. Major categories of negative risk behaviors include alcohol and drug use, sexual behavior, mental health, and nutritional aspects.<sup>4</sup> Engagement in perilous activities such as tobacco use, unsafe sex, and oral piercings may compromise mental and physical health and result in concomitant suffering from illness or injury.

Although risk behavior has been widely studied, it is underemphasized as a causative factor for poor systemic health.<sup>4</sup> While focusing on treating the medical condition, health care providers may not always consider underlying behavioral causes. For example, female adolescent dating violence has been associated with smoking, binge drinking, and cocaine use among adolescent females who experienced sexual and/or physical abuse.<sup>5</sup>

Engagement in adolescent risk taking is also frequent; there is, for example, a 40% probability that a 17-year-old male patient has had more than five sequential drinks and used tobacco within the last month.<sup>6</sup> Because males are in the age group most often diagnosed with sexually transmitted diseases, there is a 61% chance that such a patient is sexually active. An adolescent's propensity for engaging in risk behavior is generally influenced by family structure and parental influence, environmental risks

such as peer groups and the media, stage of brain development, and a lack of awareness.<sup>4</sup>

Family structure and communication patterns impact adolescent risk behavior. Nelson et al.'s study found that parents who directly communicated their expectations to avoid negative risk behaviors decreased their likelihood.<sup>7</sup> They also found that students who perceived a satisfactory relationship with their parents and reported their parents urged evading risk behaviors were less likely to participate. In contrast, peer influence often leads to taking part in risky behaviors. Forman-Alberti's study reported that adolescents who participated in risk-taking behaviors admired peers who made the same choices and accepted their involvement.<sup>8</sup>

As individuals enter adolescence, their awareness of the world advances, and they become more susceptible to external influences like the media. A study published in 2001 reported that 10% to 30% of the violent acts, sex, and drug use can be attributed to media influence.<sup>9</sup> Neurologists postulate that a temporal gap between puberty and adulthood impels adolescents toward thrill seeking.<sup>10</sup> Coupled with the slow maturation of the cognitive-control system, which regulates these impulses, there is a heightened vulnerability.

Understanding why adolescents are more prone to engaging in negative risk behaviors can raise dentists' awareness, promote increased provision of comprehensive care, and foster practitioners' willingness to express understanding and empathy when caring for these patients. The American Academy of Pediatric Dentistry (AAPD) Guidelines on Adolescent Oral Health Care assert that dental practitioners can help adolescents avert engagement in risky behaviors. They point out that "Treatment of the adolescent patient can be multifaceted and complex. Accurate, comprehensive, and up-to-date medical and social histories are necessary for correct diagnosis and effective treatment planning. Familiarity with the patient's medical history is essential for decreasing the risk of aggravating a medical condition while rendering dental care."<sup>11</sup>

We believe that health care providers are obligated to recognize the impulses that promote engaging in risk behaviors. They must be capable of speaking with adolescent patients about the associated risks, advise how and where to seek care, and encourage discontinuation of related behaviors without imposing judgment. To sincerely express concern and empathy, they must understand why adolescent patients are prone to engage in risk behaviors

and help them recognize potential dangers. Aside from discussing those issues, dental practitioners can provide educational information, brochures, or other resources that describe the associated dangers of risk behavior and offer referrals to relevant providers. Treating oral conditions among patients who are using medicines that interact with alcohol or drugs (prescription, over-the-counter, or recreational) that can lead to complications such as interactions between the epinephrine in the local anesthetic and some antidepressants (e.g., monoamine oxidase inhibitors, tricyclic antidepressants) and substance abuse drugs (e.g., cocaine) must be averted.<sup>12,13</sup> Thus, dental professionals must acquire information regarding their patients' substance use and other risk behaviors in order to provide safe care.

To further future dental practitioners' role in attaining this information, the University of Florida College of Dentistry Pediatric Dental Clinic administered questionnaires to assess adolescents' risk behaviors, using a portion of the pediatric medical history form published in the AAPD Reference Manual.<sup>14</sup> This questionnaire was administered to adolescents (age 13+) as a component of each new patient or recall examination appointment. Prior to completing the questionnaire, we explained its importance to the patient's parents.

The aim of this pilot study was to assess dental students' familiarity with adolescent risk behaviors, comfort level in discussing adolescent risk behaviors with teenage patients, and ratings of the relevance of these topics in dental education. Results from this research will help dental schools develop educational interventions to ensure that prospective providers know how to offer appropriate guidance to adolescents who engage in risk behaviors.

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## Methods

After receiving University of Florida Institutional Review Board approval for the study, we invited dental students across all four years at the University of Florida in 2017 to participate in the survey via email using the professional version of SurveyMonkey. Convenience sampling technique was used.<sup>15</sup> This non-probability sampling technique has the advantage of convenient accessibility and flexibility to the researchers.<sup>15,16</sup>

Participants' performance was assessed on 30 items, divided into two subcategories. The first subscale (15 items) measured students' comfort in discussing adolescent risk behavior topics with

patients on a scale from 1=very uncomfortable to 4=very comfortable. The second subscale (15 items) measured students' level of agreement about the relevance of adolescent risk behavior with regards to oral health care on a scale from 1=strongly irrelevant to 4=strongly relevant. After receiving permission from the AAPD, we developed the questionnaire using a portion of the AAPD pediatric medical history–supplemental history form for an adolescent patient along with other negative risk behaviors identified in the literature. (The questionnaire is available from the corresponding author.)

The survey was initially tested by conducting a pilot study with the residents of the graduate dental programs at the same institution. Next, the survey was sent via email to the dental students, preceded by a cover letter describing the study's goals.

To date, rating scale data have been treated as interval, so they are frequently analyzed using parametric techniques.<sup>16-18</sup> In addition, the F-test has been found to be robust to violations of the interval data assumption.<sup>18</sup> In this pilot study, the Shapiro-Wilk test of normality was conducted to test the sample distribution. The results showed that the outcome was approximately normally distributed for each category ( $p=0.823$ ). Independent samples t-tests were conducted to determine the potential of significant differences on the mean scores of each item and subscales across 1) training level (clinical Classes of 2017 and 2018 [third and fourth years] and preclinical Classes of 2019 and 2020 [first and second years]), 2) males and females, 3) underrepresented minority (URM) and non-URM students, and 4) age (up to 25 years and over 25 years). In addition, a post-hoc power analysis was applied to identify if the sample size was sufficient to detect inferential statistics. The significance level was set at 0.05. All of the statistical analyses were conducted with SPSS 23 (IBM Corp., Armonk, NY, USA).

## Results

Of the 373 students invited to participate, 151 completed the survey, for an overall response rate of 40.5%. The response rates by training level were 47% for the clinical students and 53% for the pre-clinical students. Among the participants, the highest percentages were female (66%), members of URM groups (53%), and 25 years of age or less (60%) (Table 1). The post hoc power analysis showed that the between-groups comparison effect size was 0.62, which, although less than the recommended 0.80 level, was acceptable.<sup>19</sup>

The males had a higher level of comfort than the females in discussing the following topics: prescription abuse (males=2.88, females=2.46;  $p=0.004$ ); recreational drug use (males=2.96, females=2.64;  $p=0.023$ ); and oral sexual activity (males=2.47, females=2.13;  $p=0.021$ ) (Table 2). No significant results were found across age for ratings of comfort. Table 3 shows the group statistics by minority status

**Table 1. Demographic characteristics of participants, by number and percentage of total respondents (N=151)**

Characteristic	Category	Number	Percentage
Gender	Male	51	34%
	Female	99	66%
Racial status	URM	80	53%
	Non-URM	71	47%
Classes	2017 and 2018	71	47%
	2019 and 2020	80	53%
Age	≤25 years	91	60%
	>25 years	59	40%

URM=underrepresented minority

Note: One participant did not respond on the gender and the age questions. Students in Classes of 2017 and 2018 were in the third and fourth years; students in Classes of 2019 and 2020 were in the first and second years.

**Table 2. Outcomes by gender regarding comfort level in discussing adolescent risk behaviors: mean (M) and standard deviation (SD)**

Behavior	Male			Female			t	df	Sig. (2-tailed)
	M	SD	N	M	SD	N			
Prescription abuse	2.88	0.80	50	2.46	0.85	99	2.93	103.92	0.004**
Recreational drug use	2.96	0.83	50	2.64	0.76	99	2.31	91.14	0.023*
Oral sexual activity	2.47	0.86	51	2.13	0.80	99	2.35	95.58	0.021*

Note: Scores were on scale from 1=very uncomfortable to 4=very comfortable.

\* $p<0.05$ , \*\* $p<0.01$

**Table 3. Outcomes by race regarding comfort level in discussing adolescent risk behaviors: mean (M) and standard deviation (SD)**

Behavior	URM			Non-URM			t	df	Sig. (2-tailed)
	M	SD	N	M	SD	N			
Clenching/grinding teeth	3.45	0.69	80	3.75	0.44	71	-3.18	135.35	0.002**
Recreational drug use	2.61	0.81	80	2.89	0.77	71	-3.19	135.36	0.003**
Oral sexual activity	2.10	0.82	80	2.39	0.84	71	-2.178	146.172	0.031*
Genital sexual activity	2.08	0.81	80	2.42	0.86	71	-2.535	144.340	0.012*

URM=underrepresented minority

Note: Scores were on scale from 1=very uncomfortable to 4=very comfortable.

\*p<0.05, \*\*p<0.01

for comfort level. The non-URM students had higher levels of comfort than the URM students in discussing clenching/grinding teeth (non-URM=3.75, URM=3.45; p=0.002); recreational drug use (non-URM=2.89, URM=2.61; p=0.003); oral sexual activity (non-URM=2.39, URM=2.10; p=0.031); and genital sexual activity (non-URM=2.42, URM=2.08; p=0.012).

Significant differences across training levels were found. The clinical (third- and fourth-year) students showed statistically significant higher levels of comfort than the preclinical (first- and second-year) students in discussing the following: alcohol abuse (2.94 vs. 2.63; p=0.012), recreational drug use (2.93 vs. 2.58; p=0.007), inhalant abuse or paint or other solvents (2.76 vs. 2.43; p=0.014), oral sexual activity (2.48 vs. 2.03; p=0.001), genital sexual activity (2.46 vs. 2.04; p=0.0002), sexual activity with an infected partner such as a sexually transmitted disease or AIDS (2.56 vs. 2.09; p=0.001), and pregnancy (3.03 vs. 2.71; p=0.022) (Table 4).

There was no difference between the males' and females' level of agreement regarding the relevance of particular adolescent risk behaviors. There were also no differences in the level of agreement about the relevance of adolescent risk behavior between students by age or minority status. Table 5 shows the test results across training levels regarding students' level of agreement about the relevance of adolescent risk behavior. Compared to the preclinical students, the clinical students showed statistically higher ratings on the relevance of the following topics: clenching/grinding teeth (3.83 vs. 3.54; p=0.003); smoking one or more of the following: cigarette, pipe, or cigar (3.83 vs. 3.63; p=0.039); chewing tobacco (3.83 vs. 3.60; p=0.021); eating disorder (3.86 vs. 3.54; p=0.001); alcohol abuse (3.49 vs. 3.15; p=0.007); prescription abuse (3.52 vs. 3.21; p=0.01); recreational drug use (3.51 vs. 3.29; p=0.045); inhalant abuse or paint or other solvents (3.39 vs. 3.06; p=0.011); oral sexual activity (3.52 vs. 3.20; p=0.008); and sexual activity with an infected partner such as a sexually transmitted disease or AIDS (3.45 vs. 3.15; p=0.032).

**Table 4. Significant results of t-test across year in dental school for students' comfort level in discussing adolescent risk behavior topics relevant to oral health care: mean (M) and standard deviation (SD)**

Topic	Third and Fourth Years			First and Second Years			p-value
	N	Mean	SD	N	Mean	SD	
Alcohol abuse	71	2.94	0.79	80	2.63	0.74	0.012*
Recreational drug use	70	2.93	0.84	80	2.58	0.73	0.007**
Inhalant abuse or paint or other solvents	71	2.76	0.87	80	2.43	0.78	0.014*
Oral sexual activity	71	2.48	0.88	80	2.03	0.75	0.001**
Genital sexual activity	71	2.46	0.88	79	2.04	0.78	0.002**
Sexual activity with an infected partner such as an STD or AIDS	71	2.56	0.81	80	2.09	0.87	0.001**
Pregnancy	71	3.03	0.83	80	2.71	0.84	0.022*

STD=sexually transmitted disease

Note: Scores were on scale from 1=very uncomfortable to 4=very comfortable.

\*p<0.05; \*\*p<0.01

**Table 5. Significant results of t-test across year in dental school for students' level of agreement about relevance of adolescent risk behaviors to oral health care: mean (M) and standard deviation (SD)**

Behavior	Third and Fourth Years			First and Second Years			p-value
	N	Mean	SD	N	Mean	SD	
Clenching/grinding teeth	71	3.83	0.48	80	3.54	0.71	0.003**
Smoking one or more of the following: cigarette, pipe, or cigar	71	3.83	0.48	80	3.63	0.70	0.039*
Chewing tobacco	71	3.83	0.51	80	3.60	0.70	0.021*
Eating disorder	71	3.86	0.46	80	3.54	0.71	0.001**
Alcohol abuse	71	3.49	0.75	80	3.15	0.78	0.007**
Prescription abuse	71	3.52	0.73	80	3.21	0.71	0.010**
Recreational drug use	71	3.51	0.67	80	3.29	0.66	0.045*
Inhalant abuse or paint or other solvents	71	3.39	0.73	80	3.06	0.85	0.011*
Oral sexual activity	71	3.52	0.69	80	3.20	0.77	0.008**
Sexual activity with an infected partner such as an STD or AIDS	71	3.45	0.79	80	3.15	0.92	0.032*

STD=sexually transmitted disease

Note: Scores were on scale from 1=strongly irrelevant to 4=strongly relevant.

\*p≤0.05; \*\*p≤0.01

## Discussion

This pilot study determined the comfort level of dental students at one dental school in discussing the topics relevant to adolescent risk behavior and their level of agreement about the relevance of adolescent risk behavior in oral health care across groups (age, gender, minority status, and training level). The students in preclinical training reported feeling uncomfortable discussing sexual activity compared to those in clinical training, whose scores were slightly higher. The students in clinical training reported significantly higher levels of comfort discussing abuse of alcohol, recreational drug use, and inhalant abuse or paint or other solvents compared to the preclinical students. The clinical students reported feeling more comfortable discussing pregnancy than the preclinical students. Perhaps it is not surprising that the students in clinical training felt more comfortable in these areas than the preclinical students; however, to our knowledge, such findings have not been reported previously. The result that the preclinical students felt uncomfortable discussing sexual activity with adolescent patients suggests that they need additional knowledge, training, or experience to enhance their level of comfort.

The male and non-URM students reported significantly higher levels of comfort in discussing some specific and sensitive topics such as alcohol, drug abuse, smoking, and sexual risk behavior com-

pared to their counterparts. Overall, however, the students in this pilot study generally reported believing that risk behaviors impact adolescent patient oral health care.

With respect to the ratings of relevance of the risk categories clenching/grinding teeth, smoking and chewing tobacco, sexual activities, and the use/abuse of alcohol, prescription drugs, recreational drugs, inhalant, paint, or other solvents, the students in clinical training had statistically higher mean scores and assessed some topics as relevant to very relevant compared to the preclinical students. However, both groups judged these topics to be relevant.

Results from this pilot study provide insight about dental students' comfort level in discussing risk behaviors. For example, the males were more comfortable discussing topics such as prescription abuse, recreational drugs, and oral sexual activity. The female students reported feeling less comfortable discussing these topics with adolescents.

The finding that URM students showed significantly less comfort in discussing alcohol, drug abuse, smoking, and sexual risk behavior than their counterparts offers opportunities to better understand why and warrants inquiry, perhaps beyond the use of survey methods. Why females showed less comfort than males in discussing prescription abuse, recreational drug use, and oral sexual activity also calls for acquiring deeper insight to explain these differences. Use of separate focus groups with females

and males, as well as URM and non-URM students, might shed light on why these student groups held different perspectives.

As a group, adolescents have been found to underuse preventive services.<sup>20</sup> They may see medical providers only for a sports physical, a cold, or other acute illness. Infrequently, they present with a behaviorally related complaint, such as binge drinking or smoking. However, something as minor as a cold may be the only occasion to screen and provide interventions for high-risk behaviors.<sup>21</sup> Therefore, it is critical that dental students experience training regarding adolescent risk behavior management.

Confidentiality and trust are key to obtaining pertinent information regarding the patient's risk behavior. When asked about risk behaviors, initially teens may feel uncomfortable talking to an unfamiliar adult. Perhaps dental schools should initiate role-play scenarios in predoctoral courses, so that students can practice clinical vignettes and become comfortable explaining and administering questionnaires and history-taking skills.

In addition to a physician, the dentist may be the first health care professional with whom adolescents can establish a trusting relationship outside of their household. Compared to the sporadic encounters they have with medical doctors, teenagers will probably be seen by dental providers at least twice a year. Since dentists may detect signs of risk behavior, they should be adequately trained to discuss those behaviors with adolescents and know how to help them seek care when indicated.

For dental providers to properly serve adolescent patients, they must demonstrate empathy and be sufficiently trained to ask questions in a non-invasive manner, so that teens do not fear revealing their engagement in risk-taking behaviors. To our knowledge, education and training about risk behavior aversion among adolescent patients have not been formally implemented in dental education. In medicine, only the residencies in pediatrics and family and internal medicine require training in adolescent care. However, pediatrics is the only residency with time committed to the study and practice of adolescent medicine. Although these programs include training experiences directed towards taking care of teenagers, many practicing physicians have been found to feel inadequately trained to screen and address risk-taking behaviors.<sup>22-24</sup>

One limitation of this study was that it took place at a single institution, so the results may not be generalizable to students in other dental schools.

Also, the study used a one-shot design; there was no comparison group. Another limitation was the lack of a priori analysis. The post hoc power analysis showed that, despite a lower than recommended between-groups comparison effect size, it was still acceptable. The overall response rate in this study was 40.5%. This relatively low response rate may have increased the risk of non-response bias, such as non-representation of a population or participant self-selection. One way to solve this problem is to select a random sample from a large sampling frame. Although pre-invitations and follow-up reminders were employed, techniques that have been advised to increase response rates such as the use of incentives might have increased the response rate.<sup>25</sup>

Future studies are needed to examine pre- and posttest changes and to assess the impact of educational interventions aimed at enhancing student knowledge and comfort in discussing at-risk behaviors. One suggestion is to conduct a randomized control trial with an experimental group of dental students who receive active and experiential educational interventions regarding adolescent risk behavior management and a control group that receives lecture-only training to determine which group felt more comfortable administering the questionnaire in a clinical scenario situation. If there were a significant difference in comfort level, then perhaps experiential educational training should be implemented for all dental students. Another suggestion is to replicate this study in other institutions to determine if the results were limited to our site or are indicative of more widespread phenomena.

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## Conclusion

The findings of this study suggest that experiential educational activities aimed at strengthening dental students' knowledge and comfort in discussing adolescent risk behaviors during patient interactions in the clinical setting are needed. Based on our pilot study findings, we recommend expanding students' understanding of the relationship between oral health care and engagement in recreational drug use, oral sexual activity, genital sexual activity, sexual activity with an infected partner such as a sexually transmitted disease or AIDS, chewing tobacco, alcohol abuse, prescription abuse, and inhalant abuse or paint or other solvents. The findings highlight the need for our dental school to provide educational activities and experiences that are directed towards ensuring that students are sufficiently trained.

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