Wellness Among Dental Students: An Institutional Study

Peter L. Harrison, DChDent; Luciana M. Shaddox, DDS, PhD; Cynthia W. Garvan, PhD; Linda S. Behar-Horenstein, PhD

Abstract: The high prevalence of distress among health professionals during their education has fostered increased interest in the study of student well-being. The aim of this study was to assess the self-perceived wellness of dental students and determine the relationship between factors affecting wellness and demographic variables. An online questionnaire was distributed to 334 first- through fourth-year dental students at one U.S. dental school. The questionnaire consisted of modified versions of the Perceived Wellness Survey, Medical Outcomes Study Social Support Survey, and Mental Health Inventory and also collected demographic information. The response rate was 78% (N=261). More than 80% of the respondents reported that they were happy all, most, or a good bit of the time. These students exhibited a strong sense of self-worth, were positive about their friendships, and perceived they had good social support. Less than 20% of respondents did not view their physical health as excellent and identified a lack of self-perceived wellness. First-year and single students reported statistically less social support. Students who were parents perceived their wellness less favorably. Hispanic and Asian students were less happy regarding their mental health than white and African American students. These findings suggest that students, especially Hispanic and Asian students, may benefit from programs that promote student well-being. Academic programs that encourage students to work together and promote peer-to-peer involvement may be beneficial, especially for first-year and single students.

Dr. Harrison is Lecturer in Periodontology, Trinity College, Dublin, Ireland, and Adjunct Assistant Professor, Department of Periodontology, College of Dentistry, University of Florida; Dr. Shaddox is Associate Professor, Department of Periodontology, College of Dentistry, University of Florida; Dr. Garvan is Research Associate Professor, College of Nursing, University of Florida; and Dr. Behar-Horenstein is Distinguished Teaching Scholar and Professor, Colleges of Dentistry, Education, Veterinary Medicine, and Pharmacy, as well as being Director, CTSI Educational Development and Evaluation and Co-Director, HRSA Faculty Development in Dentistry, University of Florida. Direct correspondence to Dr. Linda Behar-Horenstein, Department of Community Dentistry and Behavioral Science, College of Dentistry, University of Florida, P.O. Box 103628, Gainesville, FL 32610; 352-682-0768; lsbhoren@ufl.edu.

Keywords: dental education, dental students, wellness, social support, mental health, stress

Submitted for publication 7/3/15; accepted 1/24/16

For many years, the dental education community has recognized limitations of the traditional educational and training delivery model.[1] Addressing the incongruence between principles taught in dental school and the values of professional dentistry, Pyle et al. observed in 2006 that dental school could be described as "convoluted, expensive, and often deeply dissatisfying to consumers," exposing students to overcrowded and inflexible criteria and a culture of memorization before reasoning, contextualized in a passive learning environment.[2] The dental learning environment is often less than satisfactory from a student perspective, [3,4] and students may see limited opportunities for teachers or students to modify the learning environment and the degree of control allowed to them.[5]

Dental student stress has been noted as early as the first year of dental school[6] and has been widely investigated, primarily through cross-sectional studies. Although the heterogeneity of sample group characteristics and research tools used limits interpretation of overall findings, it is clear that dental students experience considerable levels of stress during their education, primarily related to academic stressors (e.g., examinations, grading, and workload) and clinical aspects of their training (e.g., clinical requirements, dealing with difficult patients, and learning clinical procedures).[7,8] Personal factors and issues with faculty (including faculty-student relations and the nature and inconsistency of feedback) also appear to be related to stress[7,8] and to students' perceptions of their learning environment.[9] In a comparative study of medical and dental student stress, dental students had greater levels of perceived stress than medical students regarding academic performance, faculty relations, and patient and clinic responsibilities.[10]

Elevated stress levels among dental students have been found to affect their academic performance, physical health, and psycho-emotional well-being.[6,7]

Stress may be considered a manifestation of the broader concept of "distress."[11] In a study of 4,300 U.S. medical students, Dyrbye et al. found that distress, which appears in the forms of burnout, depression, anxiety, fatigue, and poor mental and physical quality of life, was prevalent among most students and was independently associated with suicidal ideation and thoughts of dropping out of school.[11] The effects of distress including anxiety, depression, burnout, low academic achievement, physical illness and weight change, sleep disturbance, and substance use/abuse have been documented among dental students.[4,8,12,13]

Burnout can be a response to frequent and intense patient contacts and encompasses the subcomponents of emotional exhaustion (mental fatigue), depersonalization (distancing psychologically from others), and reduced personal accomplishment. In an evaluation of psychological and dental environment distress and emotional exhaustion among first-year students in Europe, Humphris et al. found that 36% reported significant psychological distress, and 22% reported emotional exhaustion, confirming that burnout can manifest rapidly among students.[14] In a posttest comparison of the same cohort in their fifth year, the prevalence of psychological distress and emotional exhaustion had increased.[15] Burnout and psychological distress among these dental students exceeded levels measured in an investigation of British medical students, which used the same research tools.[16] As the mean age of dental and medical students in Europe is lower than in the U.S., it is unclear whether similar levels of distress would be observed in an older U.S. dental student cohort.

In recognition of the high prevalence of student distress, there has been increased interest in addressing the well-being or wellness of health professions students.[17] Well-being encompasses the presence of positive emotions and moods, the absence of negative emotions, satisfaction with life, fulfilment, and positive functioning.[18] Student wellness programs have gained significant attention since publication of the Vanderbilt Wellness Program aimed at improving students' health and well-being early and throughout their training.[19] The program was developed according to five principal wellness domains (along with focused activities): intellectual (mentoring); environmental (community); physical (body); emotional and spiritual (mind); and interpersonal (social). Preliminary findings showed that students have been highly satisfied. However, this program, like other wellness interventions, generally represents local practices, and there have been no rigorous evaluations of such interventions. More importantly, students' perceptions of their own well-being have been less investigated. The aim of this study was therefore to assess the self-perceived wellness of dental students at one U.S. dental school and to identify if wellness factors were associated with specific demographic variables.

Methods

The University of Florida Institutional Review Board approved this study (# 2013-U-814). An online questionnaire was distributed to all dental students (N=334) enrolled in the first through fourth years at the University of Florida College of Dentistry in the fall of 2013. Students received information explaining the purpose of the study and an invitation to complete the questionnaire, with an individualized link that permitted them to take the survey only once. Reminder emails were sent to those who had not yet taken the survey in a two-month time span.

The questionnaire consisted of modified versions of the Perceived Wellness Survey,[20] Medical Outcomes Study (MOS) Social Support Survey,[21] and Mental Health Inventory (MHI-5).[22] All three survey instruments were previously validated in a survey of certified athletic trainers.[23] Minor modifications were made to reflect that our study was focused on students in a dental setting rather than employees. Only those items directly relevant to the phenomena of interest (wellness, social support, and mental health) were included. Demographic data were also collected.

The Perceived Wellness Survey consists of 37 questions related to students' self-perception of aspects of wellness, including physical health, self-worth, optimism, intellectual stimulation, future outlook, resilience, friend and family relationships, and sense of purpose. Questions use a closed-ended Likert scale with response options from 1=strongly disagree to 4=strongly agree. An adapted version of the MOS Social Support Survey was used, consisting of 12 questions regarding how often respondents feel they have various kinds of support when needed. Questions use a closed-ended rating scale with response options from 1=none of the time to 5=all of the time. The MHI-5 consists of five questions regarding respondents' perception of their mental health in the previous month. Those questions are

closed-ended with response options from 1=all of the time to 6=none of the time. Total scores on each survey were determined by totaling responses on its items, so the minimum and maximum possible scores on the Perceived Wellness Survey were 37 and 148; on the Social Support Survey were 12 and 60; and on the MHI-5 were 5 and 30.

Responses were collected using the professional and encrypted version of SurveyMonkey (Palo Alto, CA, USA). Non-parametric tests were used to measure the relationship between demographic variables and responses on individual survey instruments. Wilcoxon rank sum and Kruskal-Wallis tests were used to compare means of characteristics with two levels (e.g., gender) and more than two levels (e.g., age), respectively. Two-sided testing was used for all analyses using SAS Version 9.3 (SAS Institute Inc., Cary, NC, USA). The level of significance was set at 0.05.

Results

The response rate was 78% (N=261). Respondent characteristics are shown in Table 1. First-year students had the greatest proportion of respondents (33%), with declining response rates by successive year; fourth-year students were 16.5% of respondents. A majority of respondents (75.4%) noted that their religious faith was very or somewhat important to them. Approximately 20% said they participated in two or more hours of community service per week. Students generally reported participating in physical exercise activity, but 37.9% indicated that their participation was less than two hours per week, while 13.4% reported weekly exercise of less than one hour.

The majority (85.1%) of the respondents reported that they were happy all/most/a good bit of the time. Overall, these students reported they had a good social support: 79% identified having someone to do something enjoyable with all of the time or most of the time. Nearly all (95.5%) reported having friends with whom they could share their sorrows and joys, and 94.2% reported having friends that would be there when they needed help.

Associations between demographic groups and mean total responses on survey instruments are shown in Table 2. Mean scores for social support were significantly lower for first-year students (p=0.0096) and single students (p<0.0001). Mean scores on the Perceived Wellness survey were significantly lower for students who were parents (p=0.0334). Hispanic and Asian students had higher mean scores on the MHI-5 (p=0.0076), indicating that they were less happy with regard to their mental health than the white and African-American students. Nearly two-thirds (65.5%) reported that they were happy all or most of the time in the previous month. However, for the same period, 4.6% indicated that they felt so down in the dumps all or most of the time that nothing could cheer them up.

The respondents exhibited a strong sense of self-worth. Over 90% disagreed/strongly disagreed with the sentence "I sometimes think I am a worthless individual." Approximately four-fifths indicated that their physical health was excellent. Almost all (96.3%) strongly agreed or agreed that they "feel a sense of purpose about my future," while a large majority (89.3%) agreed or strongly agreed that they were always optimistic about their future. Most of the students (91.8%) reported being intellectually

Table 1. Participants' demographics, by number and percentage of total respondents (N=261)

Characteristic	Percentage (Number)
Gender	
Female	56.3% (147)
Male	43.7% (114)
Race/ethnicity	
White	50.2% (131)
Hispanic	22.6% (59)
Asian	18.4% (48)
African American	8.0% (21)
Native American	0.8% (2)
Year in dental school	
First	32.9% (86)
Second	25.7% (67)
Third	24.9% (65)
Fourth	16.5% (43)
Age in years	
20-24	48.3% (126)
25-29	41.8% (109)
30-34	8.0% (21)
35 or more	1.9% (5)
Parent with child/children	
Yes	5.0% (13)
No	95.0% (248)
Relationship status	
Unmarried, in relationship	42.5% (111)
Married	18.0% (47)
Single	38.7% (101)
Divorced/separated	0.8% (2)

Table 2. Association of demographic variables with mean responses on three surveys used in study

Characteristic	Perceived Wellness Mean (SD)	p-value	Social Support Mean (SD)	p-value	MHI-5 Mean (SD)	p-value
Gender						
Female	96.52 (8.25)	0.5834	47.36 (11.63)	0.9002	16.14 (2.40)	0.9606
Male	97.96 (6.36)		47.87 (10.64)		16.10 (2.63)	
Race/ethnicity						
White	96.89 (6.12)	0.1168	47.78 (11.22)	0.2803	15.74 (2.52)	0.0076
Hispanic	96.22 (10.22)		49.03 (11.62)		16.80 (2.62)	
Asian	98.64 (7.60)		46.74 (10.78)		16.55 (2.08)	
African American	98.35 (5.73)		44.35 (11.02)		15.74 (2.60)	
Year in dental school						
First	97.28 (9.00)	0.8771	44.36 (12.03)	0.0096	16.31 (2.69)	0.2902
Second	96.35 (6.88)		47.78 (10.88)		16.45 (2.79)	
Third	97.93 (6.08)		50.68 (8.36)		15.80 (1.87)	
Fourth	97.02 (6.89)		49.09 (12.18)		15.69 (2.35)	
Age in years						
20-24	96.64 (8.78)	0.1199	46.13 (11.23)	0.0813	16.43 (2.52)	0.0701
25-29	98.13 (5.87)		49.14 (10.54)		15.70 (2.15)	
≥30	95.56 (6.68)		47.85 (13.02)		16.40 (3.42)	
Parent with child/children						
Yes	94.58 (4.46)	0.0334	51.46 (8.54)	0.2178	15.83 (2.17)	0.8101
No	97.29 (7.60)		47.37 (11.28)		16.14 (2.52)	
Relationship						
Single	97.00 (8.66)	0.2151	42.56 (11.22)	<0.0001	16.35 (2.63)	0.2151
Unmarried, in relationship	97.42 (6.91)		50.02 (9.85)		15.97 (2.34)	
Married	96.68 (6.18)		53.49 (8.67)		16.02 (2.62)	

Note: Columns show participants' mean (SD) scores on the Perceived Wellness Survey, Medical Outcomes Study (MOS) Social Support Survey, and Mental Health Inventory (MHI-5). The Perceived Wellness Survey consisted of 37 questions with response options from 1=strongly disagree to 4=strongly agree. The MOS Social Support Survey consisted of 12 questions with response options from 1=none of the time to 5=all of the time. The MHI-5 consisted of five questions with response options from 1=all of the time to 6=none of the time. Minimum and maximum possible scores on the Perceived Wellness Survey were 37 and 148; on the Social Support Survey were 12 and 60; and on the MHI-5 were 5 and 30.

stimulated by dental school, and nearly all (94.1%) expressed confidence in their abilities.

Discussion

In this study, the majority of respondents appeared to be generally happy as more than four-fifths reported that they were happy all of the time, most of the time, or a good bit of time. These students also exhibited a strong sense of self-worth and were positive about their friendships. They felt they had good social support, with almost four-fifths reporting they were confident their friends would support them in times of need.

The study also found that perceptions of social support varied by year in dental school and relationship status. Additionally, being a parent, reported by 5% of the sample, was associated with a reduction in self-perceived wellness. Perhaps moving away from family and the challenges associated with adapting to a new program of study with a heavy courseload caused some first-year students to feel lonely and vulnerable. The finding of reduced social support among first-year students highlights the importance of trying to identify students at risk of distress at an early stage and the need for schools to teach dental students about stress and coping skills. Being a parent and a professional student can lead to different types of stress, emanating from concerns about their children's well-being, social needs, and learning needs in addition to the demands of their own education.

In their responses to individual statements, some students exhibited issues of insecurity and lack of confidence. For instance, almost one-third agreed/

strongly agreed that they were sometimes uncertain about their ability to do things well in the future, while more than half agreed/strongly agreed with the statement "There have been times when I felt inferior to most of the people I know." Some dental students may struggle to adapt to the competitive nature of dental school and to the fact that they are no longer at the top of the class, as most would have been standout academic performers prior to entering dental school. Changes to self-concept may be expected to impact those students lacking relationships that reinforce their self-worth and resilience and possibly explain the fact that mean values for social support were lower among single students. Frequency of participating in activities with other students has been found to be inversely associated with depression symptoms and positively associated with feelings of health and physical fitness.[24] A web-based survey of almost 1,400 college students reported that students with lower quality social support were more likely to experience mental health problems.[25]

Psychological stress and burnout appear to be highly prevalent among dental students[15,16] and postdoctoral dental residents[26] irrespective of location and course format.[8] Two studies found that many forms of distress existed among medical students and that they may significantly impact students' academic and professional lives.[11,27] Similarly, changes in general health and negative behavior patterns may not be uncommon among dental students.[4,12] Indeed, stressors inherent to the dental learning environment have been perceived unfavorably by students[9] and leaders of the profession.[1] To help educators establish the most effective learning environment, Hand developed competencies for dental faculty, the American Dental Education Association (ADEA) established competencies for the new general dentist, and Haden et al. proposed ways to make the work-life environment more balanced for faculty members.[28-30] However, despite the fact that many schools have reported modifying their curricula to align with the new standards of competency-based education, a 2009 survey of U.S. and Canadian dental schools reported that approximately half still had a primarily discipline-based curriculum format and clinical environment, and three-fifths did not have plans to facilitate self-paced learning by students.[31]

In our study, students' responses to questions regarding their physical well-being revealed that more than a third indicated they engaged in less than two hours of physical exercise per week and 20.5% disagreed or strongly disagreed that their physical health was excellent. Previous studies have found that lack of time for leisure and relaxation activities is a major stressor for dental students[8,9,11] and dental postgraduates.[26] Additionally, nearly 20% of the students in our study indicated that their physical health had restricted them in the past. Poor physical health may be a sign of dental student stress[8] and is relatively common among working dentists.[32] Students may more readily recognize or perceive changes in their physical health in response to their educational environment and routines than acknowledge psychological ill health.[15] Thus, getting students to pay attention to their physical well-being may be important in having them self-identify the presence of stressors or impairment of well-being.

Our finding that the participants' self-perceived wellness levels were high was somewhat surprising, albeit reassuring. The relationship among stress, distress, and wellness is complex, and it is possible that students may have attested to their own psychoemotional well-being even when stress/distress was present, which may be a limitation of the study. It is also possible that social desirability bias (a desire to provide answers that will be viewed favorably by others) influenced the students' responses, possibly via a hidden curriculum effect of dental school, wherein an underlying unofficial ethos can develop among faculty, staff, and students that associates distress with weakness. Repeating this study bi-annually would assist the institution in identifying if these trends remain and would offer additional insight into how wellness issues are affected as students progress through their training. Additionally, further investigations correlating presence of distress with self-perceived wellness may offer additional insight into how these factors interrelate.

The response rate in this study was very favorable (78%). Furthermore, comparison of the school's enrollment data with respondents by gender and ethnicity indicated that respondent demographics were reflective of the student body at the school, with no apparent underrepresentation of any demographic subgroup. However, the response rate was influenced by year of study and may be another limitation on interpreting the results. While more than 90% of the first-year students and approximately 80% of the second- and third-year students completed the survey, participation among fourth-year students was lower, approximating 50%. We cannot rule out the potential impact of this representation on the results. The reduced response rates among fourth-year students

may have implications for researchers conducting similar investigations in the future.

In other possible limitations, this study was limited to the students at one dental school, so it is unclear whether the findings are reflective of wider attitudes among dental students. As some of the demographic subgroups within the sample were small, care must also be taken when making inferences from the findings. In particular, the association of parental status with reduced self-perceived wellness must be contextualized in terms of the small proportion of respondents who were parents (5%). In addition, responses to questionnaires may be culture-specific, and it is possible that students of different ethnicities may have a different response style. This could potentially lead to bias attributable to response styles instead of actual differences in the characteristics being measured.

Furthermore, it must be noted that the use of self-rating of psychological traits may be inherently less reliable than professional assessment. The MHI-5 has been shown to be effective in screening for mental health as a longer version of the MHI (MHI-18) and 30-item version of the General Health Questionnaire.[33] A more recent study suggested that it may be less effective in identifying certain anxiety disorders.[34] As a short and easily administered tool, the MHI-5 could be of potential value to dental schools in helping to screen for students who would benefit from further assistance from the student health service.

Student representatives at this dental school received summary feedback of the results of this investigation. Summary findings were also disseminated at a faculty calibration session to increase awareness of wellness concerns. The findings have served as a catalyst for integrating wellness interventions into the formal and informal curricula of the school. Development of wellness programs has not been formalized as a requirement for dental schools; however, this study has identified student groups who may gain particular benefit from targeted wellness programs.

Conclusion

The students in this study reported they were happy and well, except for about 20% who did not view their physical health as excellent and 15% who reported a lack of self-perceived wellness. The findings suggest that those students, specifically Hispanic and Asian students, who tended to have lower scores for mental health responses may benefit from programs that promote student well-being. Academic programs that allow students to work together and encourage peer-peer involvement may also be beneficial, especially for first-year students, single students, and parents, who seemed to have less social support than their other student peers.

Acknowledgments

The authors wish to thank Dr. Patricia Xirau-Probert, Assistant Dean for Student and Multicultural Affairs, University of Florida College of Dentistry, and Ms. Nina Guba, dental student, for their assistance with this project. This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number and title for grant amount (award #1 D86HP24477-01-00, faculty development supporting academic dental institution curriculum for 21st century; awarded $2,552,191). This information or content and conclusions are those of the authors and should not be construed as the official position or policy of nor should any endorsements be inferred by HRSA, HHS, or the U.S. government.

REFERENCES

1. Feld MJ, ed. Dental education at the crossroads: challenges and change. An Institute of Medicine report. Washington, DC: National Academy Press, 1995.
2. Pyle M, Andrieu SC, Chadwick DG, et al. The case for change in dental education. J Dent Educ 2006;70(9):921-4.
3. Stewart DW, de Vries J, Singer DL, et al. Canadian dental students' perceptions of their learning environment and psychological functioning over time. J Dent Educ 2006;70(9):972-81.
4. Quick KK. A humanistic environment for dental schools: what are dental students experiencing? J Dent Educ 2014;78(12):1629-35.
5. Henzi D, Davis E, Jasinevicius R, et al. Appraisal of the dental school learning environment: the students' view. J Dent Educ 2005;69(10):1137-47.
6. Silverstein ST, Kritz-Silverstein D. A longitudinal study of stress in first-year dental students. J Dent Educ 2010;74(8):836-48.
7. Elani HW, Allison PJ, Kumar RA, et al. A systematic review of stress in dental students. J Dent Educ 2014;78(2):226-42.
8. Alzahem AM, van der Molen HT, Alaujan AH, et al. Stress amongst dental students: a systematic review. Eur J Dent Educ 2011;15(1):8-18.
9. Divaris K, Barlow PJ, Chendea SA, et al. The academic environment: the students' perspective. Eur J Dent Educ 2008;12(Suppl 1):120-30.

10. Murphy RJ, Gray SA, Sterling G, et al. A comparative study of professional student stress. J Dent Educ 2009;73(3):328-37.
11. Dyrbye LN, Harper W, Durning SJ, et al. Patterns of distress in US medical students. Med Teach 2011;33(10): 834-9.
12. McNiel AD, Muzzin KB, DeWald JP, et al. The nonmedical use of prescription stimulants among dental and dental hygiene students. J Dent Educ 2011;75(3):365-76.
13. Barber MW, Fairclough A. A comparison of alcohol and drug use among dental undergraduates and a group of nonmedical, professional undergraduates. Br Dent J 2006;201(9):581-4.
14. Humphris G, Blinkhorn A, Freeman R, et al. Psychological stress in undergraduate dental students: baseline results from seven European dental schools. Eur J Dent Educ 2002;6(1):22-9.
15. Gorter R, Freeman R, Hammen S, et al. Psychological stress and health in undergraduate dental students: fifth-year outcomes compared with first-year baseline results from five European dental schools. Eur J Dent Educ 2008;12(2):61-8.
16. Guthrie E, Black D, Bagalkote H, et al. Psychological stress and burnout in medical students: a five-year prospective longitudinal study. J R Soc Med 1998;91(5): 237-43.
17. Dyrbye LN, Shanafelt TD. Medical student distress: a call to action. Acad Med 2011;86:801-3.
18. Centers for Disease Control and Prevention. Health-related quality of life: well-being concepts. At: www.cdc.gov/hrqol/wellbeing.htm. Accessed 16 Oct. 2015.
19. Drolet BC, Rodgers S. A comprehensive medical student wellness program: design and implementation at Vanderbilt School of Medicine. Acad Med 2010;85(1):103-10.
20. Adams T, Bezner J, Steinhardt M. The conceptualization and measurement of perceived wellness: integrating balance across and within dimensions. Am J Health Promot 1997;11(3):208-18.
21. Sherbourne CD, Stewart AL. The MOS social support survey. Soc Sci Med 1991;32(6):705-14.
22. Berwick DM, Murphy JM, Goldman PA, et al. Performance of a five-item mental health screening test. Med Care 1991;29(2):169-76.
23. Naugle KE. Perceptions of wellness and burnout among certified athletic trainers: contributions of the wellness domains. Unpublished manuscript, University of Florida, 2009.
24. Reifman A, Dunkel-Schetter C. Stress, structural social support, and well-being in university students. J Am Coll Health 1990;38(6):271-7.
25. Hefner J, Eisenberg D. Social support and mental health among college students. Am J Orthopsychiatry 2009;79(4):491-9.
26. Divaris K, Polychronopoulou A, Taoufik K, et al. Stress and burnout in postgraduate dental education. Eur J Dent Educ 2012;16(1):35-42.
27. Dyrbye LN, Harper W, Moutier C, et al. A multi-institutional study exploring the impact of positive mental health on medical students' professionalism in an era of high burnout. Acad Med 2012;87(8):1024-31.
28. Hand JS. Identification of competencies for effective dental faculty. J Dent Educ 2006;70(9):937-47.
29. American Dental Education Association. ADEA competencies for the new general dentist. J Dent Educ 2016;80(7):825-8.
30. Haden NK, Andrieu SC, Chadwick DG, et al. The dental education environment. J Dent Educ 2006;70(12): 1265-70.
31. Haden NK, Hendricson WD, Kassebaum DK, et al. Changes in dental school curricula, 2003-09. J Am Coll Dent 2010;77(2):27-33.
32. Gorter RC, Eijkman MAJ, Hoogstraten J. Burnout and health among Dutch dentists. Eur J Oral Sci 2000;108: 261-7.
33. Berwick DM, Murphy JM, Goldman PA, et al. Performance of a five-item mental health screening test. Med Care 1991;29(2):169-76.
34. Cuijpers P, Smits N, Donker T, et al. Screening for mood and anxiety disorders with the five-item, the three-item, and the two-item Mental Health Inventory. Psychiatry Res 2009;168(3):250-5.