Predictors of Health-Promoting Behaviors Among Freshman Dental Students at Istanbul University

Kadiyre Peker, Ph.D.; Gülçin Bermek, Ph.D.

Abstract: The aim of this cross-sectional study was to determine the predictors of health-promoting behaviors among freshman dental students at Istanbul University. Data were collected from a convenience sample of 111 students using questionnaires including a sociodemographic section, the Health-Promoting Lifestyle Profile II, the Health Value Scale, the Generalized Self-Efficacy Scale, the Perceived Stress Scale, and the Multidimensional Scale of Perceived Social Support. Data were analyzed using descriptive statistics, t-test, Pearson’s correlation, and stepwise multiple linear regression. The overall health-promoting lifestyle behaviors among these students were at a moderate level, indicating that they engaged in health-promoting behaviors sometimes to often. They scored highest on the spiritual growth but lower on the health responsibility subscales. Females reported having engaged more in health responsibility behaviors and lower in physical activity than did males. Students from high-income families reported more physical activity. Significant correlations were found between overall health-promoting lifestyle behaviors, self-efficacy, health value, stress, and social support. Among all the related factors, self-efficacy was the most strongly predictive factor: it explained 61 percent of the variance in overall health-promoting behaviors. Thus, self-efficacy as a cognitive-perceptual factor should be considered by dental educators when planning educational interventions to promote students’ healthy lifestyle.

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The Educational and Community-Based Programs focus area for Healthy People 2010 emphasizes the importance of settings-based health promotion programs designed to prevent disease and improve health and quality of life. The university environment, which is an important avenue for reaching and educating young people, provides the ideal setting for health promotion and education. It is well known that university students’ health status and healthy behaviors may be influenced by student circumstances. Universities have a responsibility to create health-supportive environments and to help students to gain control over their health. One strategy for university students is to focus on health-promoting behaviors. According to Pender’s Health Promotion Model, health-promoting behaviors of individuals are actions toward increasing the level of well-being and self-actualization. Several studies have focused on the health of university students in various countries. They found that health-promoting lifestyles were affected by the factors hypothesized in Pender’s Health Promotion Model to predict these behaviors. In Turkey, studies have examined the healthy lifestyle behaviors of university students, and a couple have attempted to understand the effect of health promotion courses and university education on health-related behaviors of university students. There exist some studies on dental students’ health risk behavior, but none on the positive health behaviors and their determinants in dental students, who are expected to play a positive role as future health promoters. In recent years, there has been a growing interest in the application of a settings-based approach to health promotion in higher education. Students’ healthy lifestyles and sense of well-being can have a positive impact on their educational achievement and health.

Although there are growing concerns about the implementation of health-promoting university and campus approaches worldwide, there have been no reported Healthy Campus initiatives in Turkey. At our faculty, freshman students take a preventive medicine course designed to increase their knowledge regarding health promotion, epidemiology, and environmental health. In the framework of this course, the aim is to develop freshman dental students’ awareness and knowledge of health-promoting lifestyles and motivate them to adopt healthy behaviors. To this end, the factors that influence healthy behaviors among freshman dental students must be identified.
This study was undertaken at the Faculty of Dentistry of Istanbul University to examine freshman dental students’ health-promoting behaviors and to explore the predictors of these behaviors.

Organizing Framework of Study

The theoretical framework for this study was based on Pender’s Health Promotion Model,6 in which health-promoting behavior is an expression of the human actualizing tendency toward maintaining or increasing one’s level of well-being, self-actualization, and personal fulfillment. Derived from expectancy-value theory and social cognitive theory,13 this model contains cognitive-perceptual factors, modifying factors, and cues to action. Cognitive-perceptual factors include individual perception of the importance of health, control over health, self-efficacy, meaning of health, health status, benefits, and barriers to health-promoting behaviors. Modifying variables include demographic, biologic, interpersonal, situational, and behavioral factors. Cues to action involve prompts that lead an individual to move from decision making to actual practice of health-promoting behaviors. According to this model, both cognitive-perceptual factors and cues to action are directly related to engaging in health-promoting behaviors, while the link for modifying variables is indirect through their influence on cognitive-perceptual factors.6

For our study, the factors considered to be determinants of university students’ health-promoting behaviors were based on the findings of previous studies performed in this area. Modifying factors have included age, gender, monthly household income, place of residence, perceived social support, and perceived stress. Cognitive-perceptual factors have included perceived self-efficacy and health value. Among modifying factors, gender, age, income, level of education, enrollment level, living arrangement, and perceived social support have been shown to influence significantly health-promoting behaviors of university students.7-12,14-16 There is a growing consensus that self-efficacy is among the most important predictors of university students’ health-promoting behaviors.7,8,17-20 Perceived self-efficacy, a core construct from social learning theory, refers to individuals’ assessment of their effectiveness or competence to perform a specific behavior successfully; it is believed to be the most important characteristic in determining a person’s behavior change. Self-efficacy is directly related to health behavior, but it also affects health behaviors indirectly through its impact on goals. Self-efficacy beliefs determine how people feel, think, motivate themselves, and behave.13

The value placed on health has been positively correlated with health-promoting behaviors in some studies.17,21,22 Expectancy value theories emphasize that behavioral choice and persistence are a function of expected success of the health behavior in meeting a goal and the value of that goal.22 As a measure of environmental influences, social support was employed and found to directly affect health-promoting behaviors.17,18,20,23,24 Social support as a buffer against life stress may enhance health-promoting behaviors through providing environmental conditions to promote students’ health and reducing stressful life events.17,24 In addition to these determinants, perceived stress was included as a modifying factor because some researches have noted it can be reduced by individuals’ health-promoting behaviors and coping style.23-25 The transition to university may be an acute stressor because of increasing academic demands, new social relations, financial pressures, and reduced support from family and friends for students who move away from home. Increasing stress in this transition period may reduce an individual’s implementation of his or her intentions to engage in health-promoting behaviors.23

Materials and Methods

A cross-sectional descriptive design was used in this study. The study population was comprised of freshman dental students enrolled in the Preventive Medicine course of the Faculty of Dentistry, Istanbul University. The school administration granted approval for the study and informed consent prior to administering the questionnaire. The students were informed about the nature of the study and were instructed that participation was voluntary and information was confidential and anonymous. The data were collected during the first week of May 2009. This time was chosen to avoid stressful periods such as midterm and final examination time because this study intended to identify the usual pattern of students’ health-promoting behaviors. The questionnaires were distributed during class by a research assistant involved in teaching the students.
A questionnaire with two sections was specifically designed for the study. The first section contained questions on demographic characteristics (gender, age, place of residence, and monthly household income). The second section consisted of the Health-Promoting Lifestyle Profile II (HPLP II), the Health Value Scale, the Generalized Self-Efficacy Scale, the Perceived Stress Scale, and the Multidimensional Scale of Perceived Social Support.

HPLP II was used to measure students’ health-promoting behaviors. The scale was comprised of fifty-two items in six subscales: spiritual growth, health responsibility, physical activity, nutrition, interpersonal relations, and stress management. In this scale, respondents indicate the frequency in which they engage in each behavior using a four-point scale ranging from 1 (never) to 4 (routinely). A score for overall health-promoting lifestyle is obtained by calculating the mean of the individual’s responses to all fifty-two items. The six subscale scores are obtained similarly by calculating a mean of the responses to subscale items. The use of mean scores retains the 1 to 4 measurement of item responses and allows meaningful comparisons of scores across subscales. This scale was adopted by Pınar et al. into Turkish. In this study, the coefficient alpha was 0.89.

The four-item Health Value Scale was used to assess the value participants place on their health. Response categories ranged from 1 (strongly disagree) to 7 (strongly agree). At the time of implementation, no Turkish translation of the Health Value Scale was available. Using a standard forward-backward translation procedure, the English-language version of the questionnaire was translated into Turkish. In our study, the internal consistency of scale was tested for the whole sample of students. Test-retest reliability was assessed with a sample of fifty-eight students who participated in this study by the intraclass correlation coefficient (ICC) at two-week intervals. It had excellent internal consistency reliability with a Cronbach’s alpha of 0.85 and demonstrated perfect test-retest reliability (ICC=0.87).

As for the other scales used, the Generalized Self-Efficacy Scale is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life and was adapted by Yesilay et al. into Turkish. It is a ten-item scale with response format ranging from not at all true (1) to completely true (4). The coefficient alpha in this study was 0.88. The Multidimensional Scale of Perceived Social Support is a twelve-item scale with a seven-point scale (from 1=strongly disagree to 7=strongly agree) measuring three sources of support: family, friends, and significant other. This scale was adapted by Eker et al. into Turkish. The higher scores refer to high social support. For this sample, coefficient alpha was 0.81. The Perceived Stress Scale is a ten-item self-report questionnaire that measures respondents’ evaluation of the stressfulness of situations in the past month of their lives. It was adopted by Örücü and Demir into Turkish. A higher score indicates a higher level of perceived stress. The coefficient alpha in this study was 0.79.

The statistical analyses were performed using SPSS 15.0 for Windows (SPSS, Inc., Chicago, IL, USA). Descriptive statistics (percentage, mean, standard deviation, minimum, maximum) were used for the demographics and the HPLP II. The scores on the six subscales and the overall scores on the HPLP II were continuous variables, and the Kolmogorov-Smirnov test revealed that all the scores of HPLP II were within a normal distribution. The overall mean score for the HPLP II was 2.49 (SD=0.32, range=1.60–3.27). To determine the levels of health-promoting lifestyle, the overall mean HPLP II score was divided by tertiles into low (1.60–2.25), moderate (2.26–2.71), and high (2.72–3.27) health-promoting lifestyle. The independent sample t-test was used to determine any differences in the HPLP II according to gender and place of residence. The correlation between the HPLP II and modifying factors (age, place of residence, monthly family income, perceived social support, and perceived stress) and cognitive-perceptual factors (health value and perceived self-efficacy) was tested by the Pearson’s product moment correlation. Stepwise multiple linear regression analysis with backward elimination was used to determine best predictors of students’ overall health-promoting lifestyle behaviors. All independent variables were initially entered into the multiple regression to determine their collective contribution to overall health-promoting lifestyle. The independent variables without a substantial contribution to overall health-promoting lifestyle (p>0.10) were eliminated from the backward multiple regression analysis one at a time until the best predictors of health-promoting lifestyle were identified. The coefficients of determination (R²) were obtained for each entry to determine the contribution of the variables to health-promoting behaviors. Standardized regression coefficients were also calculated to evaluate the comparable contribution of each variable to the model because the independent variables were not all measured using the same scales and the standardized coefficients.
equalize the measurement and provide a way of determining which of the independent variables had the greatest effect.

Results

From a total of 165 freshman dental students, 129 (78 percent) students completed the questionnaire. Of the total, thirty-six students (22 percent) were not in the study as twenty-five (15 percent) were absent on the day of the survey and eleven (7 percent) did not want to participate. Eighteen students were excluded because they did not complete the sociodemographic section of the survey, leaving results from 111 students available for analysis. There were fifty-six (50.5 percent) female students and fifty-five (49.5 percent) male students. The mean age was 19.43±0.89 years (range: eighteen to twenty-two years), and all students were single. The mean monthly family income was TL 2263 (US$1523). Of the sample, 59 percent (n=65) of the students were living at home with their families, and 41 percent (n=46) were living in dormitories or shared an apartment with friends.

The overall mean score for the HPLP II was 2.49 (SD=0.32), indicating that the levels of health-promoting lifestyles among these students were moderate (Table 1). They scored highest on the spiritual growth subscale (mean=3.03, SD=0.41) but lower on the health responsibility subscale (mean=2.12, SD=0.48).

As Table 2 shows, there was no statistically significant difference between overall HPLP II score and

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<tr>
<th>Table 1. Ranges, means, and standard deviations (SD) for overall HPLP II and subscales (n=111)</th>
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<tr>
<td>Variables</td>
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<tr>
<td>Overall HPLP II</td>
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<tr>
<td>Spiritual growth</td>
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<td>Health responsibility</td>
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<td>Physical activity</td>
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<td>Nutrition</td>
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<td>Interpersonal relations</td>
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<td>Stress management</td>
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<th>Table 2. Factors correlated with the HPLP II and its subscales among freshman dental students (n=111)</th>
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<td>Factor</td>
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</tr>
<tr>
<td>Gender</td>
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<td>Male (55)</td>
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<td>t value</td>
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<td>Place of residence</td>
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<td>Family home (65)</td>
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<td>Dormitory/other (46)</td>
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<td>t value</td>
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<tr>
<td>Age (r)</td>
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<td>Monthly family income (r)</td>
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<tr>
<td>Health value (r)</td>
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<td>Self-perceived self-efficacy (r)</td>
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<td>Self-perceived social support (r)</td>
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<td>HPLP II: Health-Promoting Lifestyle Profile; SG: spiritual growth; HR: health responsibility; PA: physical activity; N: nutrition; IR: interpersonal relations; SM: stress management; r: Pearson’s correlation coefficient</td>
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<td>*p&lt;0.05, **p&lt;0.01</td>
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Significant differences were revealed in the health responsibility (p<0.05) and physical activity (p<0.05) subscales. Males engaged more in physical activity behaviors than did females, whereas females engaged more in health responsibility behaviors than did males. There were no significant differences in overall HPLP II score and its subscale scores in terms of place of residence and age. We found a significant correlation between monthly family income and physical activity subscale (r=0.23, p<0.05).

Health value was positively correlated with the overall HPLP II score, interpersonal relations, and stress management (r=0.27, 0.36, 0.31; p<0.01), respectively, and spiritual growth (r=0.21; p<0.05). There were significant correlations noted between perceived self-efficacy and the overall HPLP II score (r=0.79, p<0.01) and all the subscale scores (range=0.31–0.93; p<0.01). Perceived social support was positively correlated with the overall HPLP II, health responsibility, spiritual growth, nutrition, interpersonal relations, and stress management scores (r=0.62, 0.37, 0.56, 0.39, 0.73, 0.43; p<0.01), respectively, and physical activity score (r=0.20; p<0.05). In addition, there were significant negative relationships between perceived stress and the overall HPLP II score (r=-0.47, p<0.01) and all subscale scores, except for physical activity (range=-0.26 to -0.58, p<0.01).

The initial full model that included all independent variables explained 62.1 percent of the variance of health-promoting behaviors (Table 3). Backward multiple linear regression analysis eliminated these independent variables from the initial model in the following order: age, health value, place of residence, gender, income, perceived stress, and perceived social support. The independent variable of self-efficacy was retained in the best predictive model for health-promoting behaviors, explaining 60.9 percent of the variance of health-promoting behaviors (β=0.78, p<0.0001). Other variables were able to add only 1.2 percent into the prediction.

### Discussion

The overall score for health-promoting lifestyles among dental students in this study was moderate. This result was consistent with previous studies performed in Turkey indicating that these students sometimes to often engaged in health-promoting behaviors. As to six subscales of health-promoting lifestyles, these students scored highest in the spiritual growth subscale, which was consistent with the finding obtained from a group of Turkish university students. This may be explained by the fact that the university environment is the most effective atmosphere for developing spiritual growth among Turkish university students regardless of family authority. In addition, all the universities have counselling and guidance centers to serve the individual, educational, and career needs of students. The most striking result was that the first-year dental students had the lowest score in the health responsibility subscale. School health services are organized by the Ministry of Education and Ministry of Health according to Turkish law. It is generally taken to be synonymous with health screening, and little attention is given to school-based health promotion programs to develop skills for promotion and maintenance of students’ health as well as to ensure the modification of risky health behaviors in higher education. Thus, students entering university are less likely to feel responsibility for their health and more likely to engage in risky health behaviors.

In this study, some sociodemographic factors were significantly associated with the health-promoting behaviors. We found no significant differences between the female and male students in the overall health-promoting lifestyle. However, gender differences were noted with two of the subscales. Females had the highest score for health responsibility, which is similar to the findings of Karadeniz et al. This might be a result of societal expectations in our cul-

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**Table 3. The coefficients of determination in the initial and best predictive models for the HPLPII**

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<tr>
<th>Model</th>
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<th>R2</th>
<th>R2 change</th>
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<tr>
<td>Initial</td>
<td>0.788</td>
<td>0.621</td>
<td>0.621</td>
<td>20.308</td>
<td>0.000</td>
</tr>
<tr>
<td>Best</td>
<td>0.780</td>
<td>0.609</td>
<td>-0.012</td>
<td>164.882</td>
<td>0.000</td>
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Dependent variable: HPLP II

*Predictors: perceived stress, monthly family income, gender, perceived social support, age, place of residence, health value, and self-efficacy

*Predictor: self-efficacy
ture that women must fulfill certain functions within the family, such as taking care of children and other family members. Consistent with the findings of Lee and Loke, males reported higher physical activity behaviors than females.

Consistent with the findings of Hong et al., we also found no significant differences according to monthly family income with respect to overall health-promoting lifestyle and all subscales except physical activity. Campus facilities and services of our faculty are often oriented towards sedentary leisure time activities rather than physically active leisure activities. For this reason, students must use outside facilities, which require the purchase of equipment or access to fee-based social amenities for certain physical activities. Similarly to previous studies, we found no differences in overall health-promoting lifestyle in terms of age and place of residence.

Results of univariate analysis showed that students who placed a high value on health were significantly more likely to perform health-promoting behaviors, in agreement with some studies that have found a strong association of the value of health with health-promoting behaviors. As did previous studies, the results of our study indicate that the students with higher levels of perceived stress reported lower participation in health-promoting behaviors. Furthermore, the correlation between perceived social support and overall health-promoting lifestyle and all the subscales was consistent with other studies.

The results of a multiple linear regression analysis showed that perceived self-efficacy was the strongest positive predictor of students’ health-promoting behaviors, which suggests that the students with higher perceived self-efficacy are more likely to engage in health-promoting behaviors. Our findings support previous studies on determinants of health-promoting lifestyle behaviors, which reported that self-efficacy as a cognitive-perceptual factor was strongly associated with health-promoting behaviors.

There were limitations to the study. The cross-sectional design could not explain causation and changes over time in lifestyle behaviors. There is a need for research that follows students from their freshman to senior years to track changes in health-promoting behaviors. The sample was a convenience sample of freshman dental students at one dental school. Consequently, the sample cannot be considered truly representative of the general first-year dental student population. In addition, data were collected via self-report questionnaires, which might have introduced a social desirability bias. Thus, social desirability bias should be detected and controlled by using social desirability scales such as the Marlowe Crowne Social Desirability Index in future studies.

In conclusion, the findings of this study provide information about health-promoting behaviors and its determinants in freshman dental students, which can help faculty administrators, curriculum planners, and dental educators design guidelines for structuring a healthier campus and developing health promotion programs that support healthy choices among students. Perceived self-efficacy should be considered when developing a student health promotion program. Bandura suggested that self-efficacy is a generative capability in which cognitive, social, emotional, and behavioral subskills are organized and that it influences effort and persistence in actions through cognitive, motivational, and affective processes as well as through the choices the individual makes. To date, noteworthy studies have demonstrated that students’ self-efficacy beliefs can be enhanced using student-centered learning approaches to increase their problem-solving, critical thinking, and communication skills. Dental educators are using the traditional teacher-centered approach in the preventive medicine course. This study would assist dental educators in developing skill-based health education programs aimed at developing students’ life skills by using interactive or participatory teaching and learning methods. This study suggests that a student-centered approach, instead of a teacher-centered approach, should be used to maximize students’ self-efficacy beliefs in health promotion programs. Future studies are needed to investigate the effects of various interactive and participatory teaching methods to develop students’ self-efficacy toward healthy lifestyle behaviors. In addition, qualitative studies using focus group and in-depth interviews will provide essential knowledge about students’ health promotion needs, interests, and concerns for faculty administrators and curriculum planners to develop effective health promotion programs and healthy campus environments. In addition, personal health promotion should become a part of dental students’ education since dental students as future oral health professionals should practice health promotion in their own lives.
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