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Addiction prevention education: Effects on healthy behaviors and substance use attitudes in young adults

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ABSTRACT

Objective: This study examined the impact of a 14-week elective course, approaches to addiction prevention, on university students' health-promoting lifestyle behaviors and their beliefs and attitudes toward substance use.

Methods: A one-group pretest – posttest design was used. A total of 294 undergraduate students (mean age = 19.8 years) completed surveys at weeks 1 and 14. Measures included the Health-Promoting Lifestyle Profile-II (HPLP-II) and the Beliefs and Attitudes toward Drug Use Scale for Youth. The intervention combined theoretical content (addiction, neurobiology, risk factors) with practical skills (Pilates, mindfulness, stress management). Paired samples t-tests were used to compare pre- and post-intervention scores.

Results: Results showed significant improvement in the HPLP-II total score ($p < 0.05$), particularly in Physical Activity, Spiritual Growth, Interpersonal Relations, and Stress Management subscales ($p < 0.05$). However, Nutrition and Health Responsibility subscales showed no significant change ($p = NS$). In the Beliefs and Attitudes Scale, only the Beliefs about Substances subscale improved ($p < 0.05$); others were not significant ($p = NS$).

Conclusions: A multi-component, structured addiction prevention course offers comprehensive health benefits to students by significantly supporting healthy lifestyle behaviors and transforming cognitive beliefs regarding substance use. This study highlights the importance of adopting multidimensional, curriculum-integrated addiction education as a preventive mental health strategy for the youth.

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Curriculum-integrated intervention; healthy lifestyle behaviors; substance use attitudes; university students; young adults

Introduction

According to the World Health Organization (WHO), approximately 270 million people worldwide use illicit substances, with over 600,000 substance-related deaths occurring annually (WHO, 2024). Addressing addiction requires a multidimensional approach, encompassing not only biological and psychological aspects but also social, cultural, and economic factors (Zengin Yazıcı & Tanrıverdi, 2025). Young adulthood – particularly the university period – is a critical developmental stage marked by identity formation, lifestyle development, and increased vulnerability to risky behaviors such as substance use. In this context, individuals aged 18 to 29 are often considered most at risk, in alignment with the WHO's definition of young adulthood (Rizzo et al., 2025; Tanrıverdi & Yekelenga, 2019).

The university environment plays a significant role in shaping both academic and behavioral trajectories. Consequently, university students are often targeted in addiction prevention efforts. While many international programs rely on short-term seminars or peer-led interventions (Hikmat et al., 2025; Latakgomo, 2024), such formats often fall short in producing lasting behavioral change. In contrast, long-term, curriculum-integrated programs grounded in behavioral models have shown promising outcomes – such as reduced substance use and improved emotional regulation – in various countries, including the United States, Israel, Japan and, India (Chaudhary et al., 2025; Rajkumar, 2024; Romem Porat et al., 2025).

In Türkiye, however, addiction education in higher education institutions is mostly limited to single-session seminars, conferences, or short-term social responsibility projects (Kadan & Aral, 2024; Köktaş & Yiğitoğlu, 2024). Despite the proven effectiveness of curriculum-integrated interventions abroad, sustained, course-based addiction education remains limited within higher education in Türkiye. Only a few studies have examined the long-term impact of structured, credit-bearing addiction education programs at the university level.

This study examines the effects of the elective course Approaches to Addiction Prevention on university students' health-promoting behaviors and substance-related attitudes. It also aims to contribute a sustainable, structured, and online model for addiction education in Türkiye and beyond. Based on the literature, we hypothesized that participation in the structured, curriculum-integrated addiction prevention course would lead to improvements in health-promoting behaviors and substance-related beliefs and attitudes among university students.

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Materials and methods

Ethics

Ethical approval was granted by the Scientific Research Ethics Committee of Bezmialem Vakıf University (Approval No: E-54022451-050.04-210441).

Research design and procedure

This study utilized a one-group pretest – posttest quantitative design. The course structure and assessment criteria were obtained from the university's Bologna Information System (Bezmialem Vakif University, n.d.). The course was delivered online, and data collection was conducted digitally through surveys administered via Google Forms, integrated into the Student Information System (SIS). Surveys were distributed during live sessions in Week 1 (pretest) and Week 14 (posttest). To minimize potential bias, participation was anonymous and voluntary. Students were informed that their responses would remain confidential and would not influence their course grades.

Participants

Initially, a total of 367 undergraduate students from Bezmialem Vakıf University enrolled in the elective course Approaches to Addiction Prevention during the 2024–2025 academic year were invited to participate in this study. Inclusion criteria were: (i) first-time enrollment in the course, (ii) age between 18 and 29 years, (iii) attendance of at least 80% of course sessions, (iv) successful completion of the course with a passing grade, and (v) completion of both pre-test and post-test assessments. Exclusion criteria included: (i) withdrawal from the course before completion, (ii) having previously taken the course, and (iii) reporting a diagnosed mental health condition.

Of the initial 367 students, 73 were excluded due to ineligibility, voluntary withdrawal, or incomplete data. The final sample consisted of 294 students who met all inclusion criteria and completed both assessments. A flowchart of the participant selection process is presented in Figure 1.

An a priori power analysis indicated that a minimum of 66 participants would be sufficient to detect a medium effect size (Cohen's $d = 0.35$) with 80% power at $\alpha = 0.05$. With 294 participants, a post hoc power analysis revealed a power of 1.00, indicating a high likelihood of detecting statistically significant effects.

Data collection tools

Sociodemographic data form

The sociodemographic form consisted of structured, closed-ended items designed to collect background information relevant to the study. Variables included age, gender, academic department, and year of study. Additionally, participants' official final course grades were retrieved from the university's SIS. These grades reflected students' academic performance in the course and were included to support descriptive analyses.

Beliefs and attitudes toward drug use scale for youth

The scale was developed by Fok and Tsang (2005) and adapted into Turkish by Erci et al. (2020). This self-report scale aims to assess adolescents' cognitive and emotional orientations toward substance use. It consists of 24 items rated on a 4-point Likert-type scale. Exploratory factor analysis identified two primary factors: beliefs about substance use, and

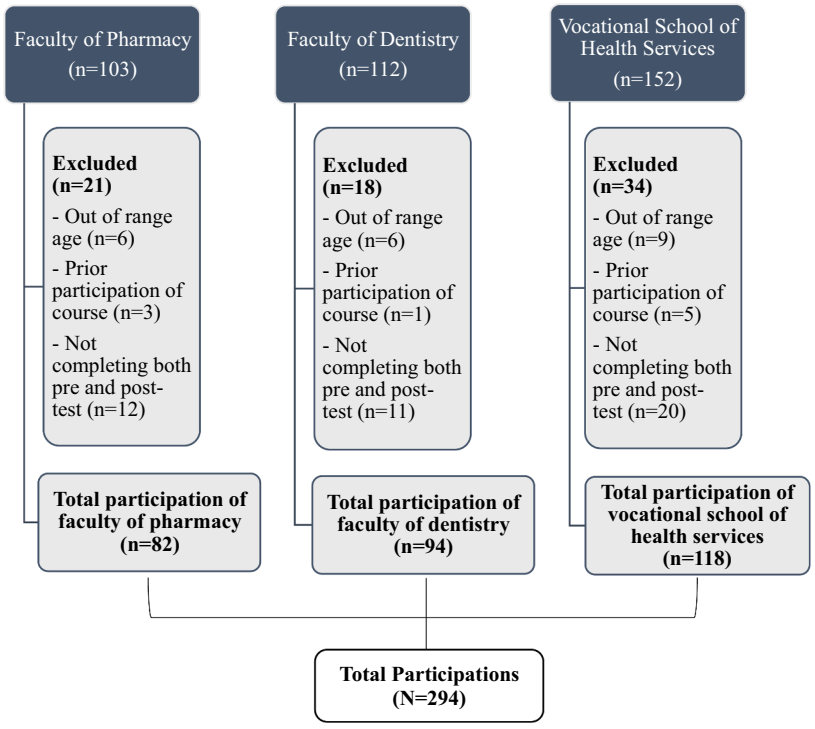

Figure 1. Flow chart.

attitudes toward substance use combined with anti-drug awareness (Fok & Tsang, 2005). The internal consistency of the Turkish version was reported as 0.78 for the overall scale (Erci et al., 2020).

Health-promoting lifestyle profile II (HPLP-II)

The scale was originally developed by Walker et al. (1995) and adapted into Turkish by Bahar et al. (2008) through a validity and reliability study. The HPLP-II is a self-report instrument designed to measure the frequency of behaviors that promote health and well-being. It includes 52 items rated on a 4-point Likert-type scale. The scale comprises six sub dimensions: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management (Walker et al., 1995). Turkish version of the scale was reported as 0.92, indicating high reliability (Bahar et al., 2008).

Intervention – addiction prevention course

The intervention consisted of a newly developed elective course titled Approaches to Addiction Prevention, first implemented at university during the 2024–2025 academic year. This 14-week course was delivered online through weekly 45-minute sessions and served as the independent variable in the study.

Designed within a biopsychosocial framework, the course aimed to enhance students' knowledge, awareness, attitudes, and behavioral tendencies related to addiction. The initial sessions focused on foundational concepts, including definitions of addiction, DSM-5 diagnostic criteria, and stages of addiction. Both substance and behavioral addictions were discussed, with an emphasis on addiction as a public health issue.

Subsequent sessions explored the neurobiological mechanisms of addiction, such as the brain's reward system, dopamine regulation, and physiological pathways underlying addictive behaviors. This content encouraged students to understand addiction through an integrated lens beyond social explanations.

Mid-course modules addressed risk factors, diagnostic tools, and national policies on addiction prevention in Türkiye. These components provided both clinical insight and socio-political context. The second half of the course emphasized rehabilitation strategies, including family and group therapies, peer support systems, and the use of physical activity – particularly Pilates – as a means of stress reduction and behavioral regulation.

Experiential components also included mindfulness techniques, breathing exercises, and evidence-based relapse prevention strategies to foster emotional resilience. In later sessions, students examined interdisciplinary approaches to treatment and the roles of healthcare professionals such as physicians, occupational therapists, and physiotherapists in collaborative addiction care. Contemporary literature and international best practices were integrated throughout the course. The course was co-taught by an Assistant Professor of Occupational Therapy and an Associate Professor of Physiotherapy and Rehabilitation. Weekly session content is outlined in Table 1.

Data analysis

All statistical analyses were conducted using IBM SPSS Statistics version 26.0. Before proceeding with the main analyses, the dataset was screened for missing values, outliers, and normality assumptions. Cases with incomplete pre- or posttest data were excluded, and no data imputation was applied. Normality was evaluated using the Kolmogorov – Smirnov test, skewness and kurtosis values, and histogram inspections. The results confirmed that the data met the criteria for normal distribution, supporting the use of parametric tests. Descriptive statistics were calculated to summarize participants' sociodemographic characteristics and scale scores. To evaluate the effect of the intervention, paired samples t-tests were conducted to compare pre- and posttest scores on the HPLP-II and the Beliefs and Attitudes Toward Drug Use Scale. Subscale scores were also examined to identify changes in specific behavioral domains. Statistical significance was determined at $p < 0.05$.

Results

A total of 294 participants provided complete sociodemographic data, with a range from 18 to 29 years. The sociodemographic characteristics of the participants are presented in Table 2.

Pre- and posttest comparisons for the Beliefs and Attitudes toward Substance Use Scale and the HPLP-II are summarized in Table 3 and Figure 2.

Table 1. 14 week course schedule.

Week	Course Topic
1	Introduction to the Course and Addiction
2	Definition of Addiction and Basic Concepts
3	Types of Addiction
4	Neuroanatomy, Physiology, and Mechanisms of Addiction
5	Conditions and Symptoms Leading to Addiction
6	Diagnostic Criteria and Assessment of Addiction
7	Institutions and Organizations Responsible for Addiction Prevention
8	Rehabilitation Approaches in Addiction – I (Mindfulness)
9	Rehabilitation Approaches in Addiction – II (Yoga and Meditation)
10	Rehabilitation Approaches in Addiction – III (Pilates)
11	Rehabilitation Approaches in Addiction – IV (Physical Activity)
12	Rehabilitation Approaches in Addiction – V (Stress Management and Breathing Techniques)
13	Multidisciplinary Teams in Addiction Intervention
14	Evidence-Based Approaches in Addiction and Conclusion

Table 2. Sociodemographic characteristics of the participants (n = 294).

Variable	n (%)
Gender	
Female	152 (78.35)
Male	42 (21.65)
Class Year	
1st Year	168 (57.14)
2nd Year	126 (42.86)
Department	
Faculty of Dentistry	94 (31.97)
Faculty of Pharmacy	82 (27.89)
Vocational School of Health Services	118 (40.14)
Smoking	
Yes	87 (29.59)
No	207 (70.41)
Alcohol Use	
Yes	34 (11.56)
No	260 (88.44)
	Mean ± SD
Age, year	19.80 ± 1.85
Final Course Grade	
Faculty of Dentistry	92.05 ± 3.12
Faculty of Farmacy	96.63 ± 2.87
Vocational School of Health Services	91.42 ± 3.56

Note. SD: Standard Deviation.

Table 3. Changes in students' beliefs and health behaviors before and after the intervention (n = 294).

Subscale	Pre-Test (Mean ± SD)	Post-Test (Mean ± SD)	t	df	p	Cohen's d
Beliefs about Substances	29.93 ± 4.94	32.39 ± 5.62	14.54	293	< 0.05	0.56
Attitudes toward Drug Use	25.18 ± 3.96	25.22 ± 4.12	0.62	293	NS	0.01
Anti-Drug Information	10.09 ± 1.96	10.20 ± 2.16	1.83	293	NS	0.05
Total Beliefs and Attitudes Score	64.86 ± 9.88	66.24 ± 11.29	4.11	293	< 0.05	0.23
Physical Activity	16.18 ± 3.92	17.92 ± 4.81	11.79	293	< 0.05	0.51
Spiritual Growth	21.04 ± 3.93	22.58 ± 4.93	10.7	293	< 0.05	0.43
Interpersonal Relations	19.69 ± 4.09	21.28 ± 4.86	10.25	293	< 0.01	0.45
Stress Management	17.91 ± 4.01	19.35 ± 4.94	9.82	293	< 0.01	0.42
Nutrition	20.26 ± 4.02	20.50 ± 4.89	1.76	293	NS	0.05
Health Responsibility	17.95 ± 4.15	18.08 ± 4.29	1.93	293	NS	0.03
Total HPLP-II Score	114.84 ± 11.86	120.74 ± 13.88	13.06	293	< 0.01	0.56

Note. Paired sample t-tests were conducted; df = 293. Cohen's d indicates the effect size; NS = not significant; SD: Standard Deviation; HPLP-II: Health-Promoting Lifestyle Profile II.

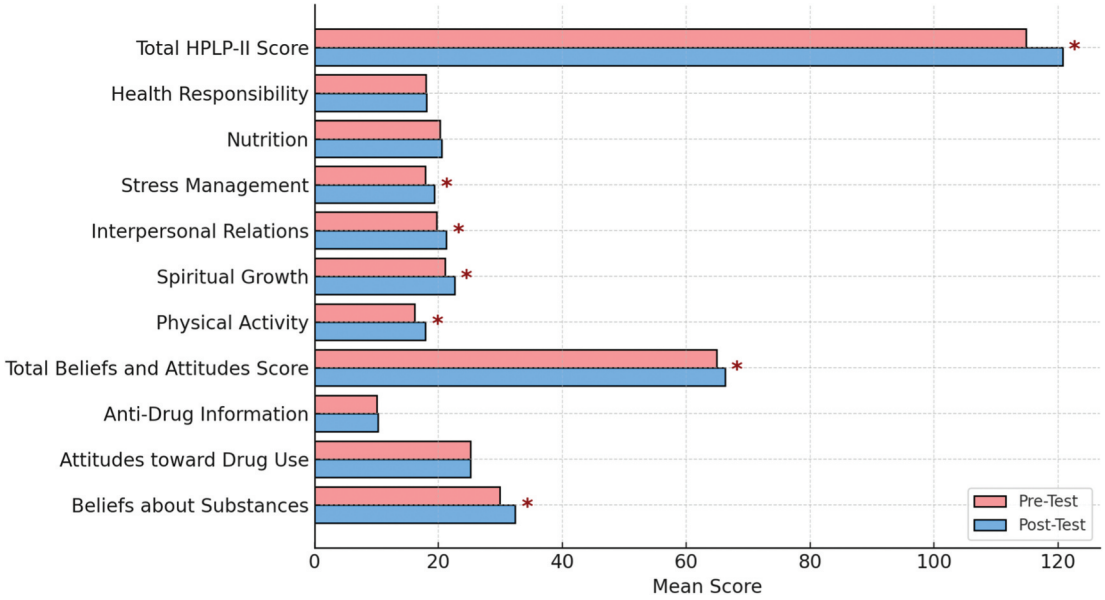

Figure 2. Changes in students' beliefs and health behaviors before and after the intervention. * $p < 0.05$.

After the 14-week intervention, total scores on the Beliefs and Attitudes Scale increased significantly ($p < 0.05$), with notable gains in the Beliefs about Substances subscale. No significant change was found in Attitudes toward Drug Use or Anti-Drug Information (p = NS). Similarly, HPLP-II total scores showed significant improvement ($p < 0.05$). Subscales with significant gains included Physical Activity, Spiritual Growth, Interpersonal Relations, and Stress Management. Nutrition and Health Responsibility showed minor increases, but these were not statistically significant (p = NS).

Discussion

This study contributes to the existing literature on university-based addiction prevention by demonstrating that a curriculum-integrated, multi-component course can positively influence students' health-promoting behaviors and substance-related beliefs. Unlike traditional lecture-based or single-session interventions, the structured and experiential nature of the course appears to foster greater engagement with self-regulation, emotional awareness, and behavioral adaptation. These findings align with contemporary health psychology frameworks, such as Bandura's (1997) self-efficacy theory and the Transtheoretical Model (Prochaska & DiClemente, 1983), which emphasize sustained, contextually grounded interventions in promoting behavioral change among young adults.

Improvements were most pronounced in areas related to internal behavioral regulation – namely physical activity, stress management, spiritual growth, and interpersonal relationships. These outcomes reflect the course's applied content, such as Pilates, mindfulness practices, and group-based reflection sessions. Prior literature supports the efficacy of experiential education in improving behavioral self-awareness (Griffith et al., 2017) and emotional resilience (Islam et al., 2023). Similarly, peer interaction and group-based modules may have facilitated social learning processes, contributing to gains in interpersonal functioning (Hennessy & Tanner-Smith, 2015).

One of the most significant improvements was observed in the "beliefs about substance use" subscale, suggesting enhanced cognitive awareness regarding the risks of addiction. This result is likely attributable to the course's neuroscience-based content, which emphasized the biological, psychological, and social dimensions of addiction. Previous research (Rezapour et al., 2025) has demonstrated that integrating neuroscience into health education can foster deeper processing of risk-related information. However, the lack of change in attitudes and anti-substance knowledge underscores a critical limitation of cognitive-only interventions. According to Ajzen's Theory of Planned Behavior (1991), modifying attitudes requires not only informational input but also reinforcement through social norms and behavioral modeling. Long-term behavioral change is facilitated by sustained exposure, positive role models, and environmental support.

The clinical relevance of these findings lies in their application to healthcare education. Many participants were students in health-related disciplines, and by fostering awareness of addiction mechanisms and risk behaviors, the course contributes to their future competencies in patient education, preventive counseling, and empathetic care. Embedding such interventions into university curricula may strengthen not only personal health literacy but also the capacity of future health professionals to respond to substance use challenges in their clinical practice. This dual impact – on both personal development and professional skill-building – supports broader public health goals.

Despite these improvements, certain domains such as health responsibility and nutrition did not exhibit significant changes. These behaviors are typically more resistant to change and often shaped by structural constraints such as housing conditions, time limitations, and socioeconomic factors (Zengin Yazıcı & Tanrıverdi, 2025). It is also possible that the once-weekly format of the course was insufficient for generating behaviorally sustained outcomes in these domains. Furthermore, the demographic composition – primarily female students – may have influenced responsiveness to certain modules, as gender-specific trends in health behaviors and emotional processing are well documented.

Limitations

This study has several limitations. This study has several limitations. First, the absence of a control group restricts causal interpretations. Data were self-reported, which may introduce bias. Although the questionnaire included an item on illicit drug use, all participants responded negatively, likely due to legal or social concerns, and thus it was not analyzed further. Additionally, stratified analyses based on gender or academic discipline were not conducted, which may have limited the exploration of differential effects. Lastly, the sample was drawn from a single institution, and no follow-up data were collected to assess long-term outcomes.

Conclusion

A curriculum-integrated addiction prevention course led to meaningful improvements in students' health-related behaviors and substance-related beliefs. Experiential and neuroscience-informed modules appear to enhance self-regulation and behavioral awareness. While some domains remained unchanged, the program offers a promising model for early intervention strategies in university settings. Future research should explore long-term impacts and the scalability of such interventions across diverse academic and cultural contexts.

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Consent for publication

All respondents signed informed consent forms for participation. Consent for publication of data was included in the consent process.

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