

Chapter 7

Insights and Recommendations for Fighting Substance Use and Addiction

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Abstract

The Northern Cyprus Prime Ministry's Anti-drug Commission European School Survey Project on Alcohol and Other Drugs (ESPAD) program is an excellent initiative to gain in-depth knowledge about youth substance use to enable improved prevention and substance abuse treatment efforts. Comprehensive substance use data were collected from 3091 fifteen-sixteen-year-old high school students in Northern Cyprus. These data provide insight into the types of drugs adolescents are using, when substance use is initiated, the frequency and route of substance use, and many other important factors to direct the appropriate and efficient use of limited resources to reduce drug use and addiction. The findings of this research provide the Northern Cyprus Anti-drug Commission the data necessary to develop a better, more comprehensive assessment of the challenges of adolescent substance use and improved prevention and treatment strategies. It is particularly crucial to stay abreast of constantly changing trends in the availability of and desire for different psychoactive substances, especially with the worldwide introduction of more than 900 novel psychoactive substances. One recurring theme is that educational institutions play a crucial role in substance use prevention. It is imperative that the Northern Cyprus Anti-drug Commission foster close collaborations with schools and primary care physicians to educate and communicate with youth and their families about the negative health and behavioral effects of substance use. Improvements in data collection and the ability to evaluate longitudinal outcomes is critical to enhancing the value of the ESPAD report. Based on the current available summary data format, relevant microdata cannot be accessed and detailed and comparative analyses between variables cannot be made. It is essential that these efforts continue each year to provide the needed longitudinal data to guide Northern Cyprus' fight against adolescent substance use.

Keywords: Substance abuse, addiction, ESPAD, adolescence, prevention, treatment

7.1. Introduction

Substance use disorders have significant public health, societal and economic implications and effective strategies are needed to prevent and successfully treat these disorders. Substance use disorders are chronic, relapsing conditions, making it imperative to prevent initiation of use, to develop effective treatment programs and to educate the public, families and adolescents on the toxicities associated with regular substance use. Adolescents have distinct patterns of substance use, generally beginning with alcohol, cannabis, and tobacco. This is why it is essential to design special intervention programs for young adults and males, who are at higher risk of substance use, before experimentation with substances converts to substance dependence and addiction.

During the critical developmental phase of adolescence, youth undergo numerous biological, psychological, and social changes that influence initiation of and progressing psychoactive substance use (Luciana et al., 2018). Adolescent substance use should not be considered solely a behavioral disorder, but a result of coping deficiencies and emotional dysregulation (Garke et al., 2021). Around the world in the past, adolescents generally experimented with alcohol or tobacco first. This was substantiated in the current Northern Cyprus ESPAD data; however, more recently, the first psychoactive substance that many young people try in North America is cannabis. It will be interesting to see if this occurs in Northern Cyprus in the future, and if education and prevention efforts to reduce cannabis availability and use by youth can succeed in stopping initiation of cannabis use.

Based on the 2024 ESPAD report, lifetime alcohol use among 15-16-year-old adolescents in Europe is 74%, cigarette use 32%, and cannabis use 12% (ESPAD Report, 2025). ESPAD is administered in 35 countries, including Northern Cyprus, where it is managed by the Prime Minister's Anti-drug Commission. Continuous, quantitative and detailed ESPAD survey data provide the necessary knowledge on developing educational programs on the harms of substance use and how to discourage initiation of intake in this vulnerable population. Adolescence is a critical period characterized by rapid

biological, psychological and social changes and increased vulnerability to experiment with substances and be affected by peer influence.

7.2. Findings and Discussion

Each chapter in the ESPAD report provides important findings to guide the development of policy, educational outreach, and new prevention and treatment programs. The use of alcohol to cope with depressive feelings and the use of tobacco, cannabis, and alcohol among adolescents in Northern Cyprus were examined. Unfortunately, a harmful response to the emotional highs and lows experienced by adolescents during development is to use substances to cope. Adolescents also experiment with greater independence and decision-making, including risk-taking and initiation of substance use. The ESPAD survey in Northern Cyprus adolescents found significant positive relationships between depressive drinking and heavy alcohol consumption (binge drinking), with a significant but weak association with cigarette use.

Although alcohol was preferred to cope with psychological stress, it also increased adolescent's tendency to use other substances. Alcohol, tobacco, and cannabis consumption may provide short-term relief of depressive symptoms but also may lead to serious long-term negative effects on physical and mental health (Leslie et al., 2020; Levine et al., 2020), including exacerbation of depression. The data showed that depressive drinking tendency predicted not only general substance use but also duration, frequency, and intensity of use, providing important information for preventive mental health services.

Alcohol intake to cope with depressive feelings was a strong predictor of the “escape strategy” binge drinking (Inguglia et al. 2019). Young people drink heavily in groups or on weekends as a coping mechanism. Coping with depression by drinking alcohol also significantly increased the frequency of cigarette smoking among young people. Cigarettes are easily accessible and more socially accepted in Northern Cyprus where a large proportion of the adult population smokes. Wang et al., 2021 emphasized the bidirectional relationship between depression and cigarette use, suggesting that depressive symptoms trigger nicotine use, and nicotine, exacerbates depressive symptoms

in the long term. Birrell et al., 2020 reported the same bidirectional causality with increasing depression contributing to substance use and substance use contributing to depression, leading adolescents with high levels of depressive symptoms to initiate substance intake at an earlier age and more frequently.

Bekiroğulları and Tremeşeli (2023) showed that substance use in Northern Cyprus adolescents begins with cigarettes and alcohol and may transition to illicit substances over time, supporting the necessity of longitudinal studies to determine causality. Addition of social support level, parental monitoring, academic achievement, and peer influence into research models, rather than focusing solely on depressive drinking, would further increase result validity and comprehensiveness. A suggestion was made to include qualitative data collection (e.g., interviews, focus groups) to better understand why young people turn to substance use.

The Northern Cyprus Anti-drug Commission not only collects data to direct resource allocation, develop educational, prevention and treatment programs, but there is a focused attempt to improve the reliability of the ESPAD questionnaire. The reliability of the psychosocial subscales of the Northern Cyprus ESPAD. "Family Support" (Cronbach's alpha of .93), "Peer Support" (.96), and "Time Spent on Social Media" (.85) were highly reliable. "Social Pressure" (.68) was just below the minimally acceptable level of .70 for psychological measurements, and "School Absenteeism" (.55) demonstrated lower internal consistency and need to be revised or restructured. Longitudinal studies were strongly recommended, as was determining test reliability in Southern Cyprus to enable comparisons between the two Cypriot locales. In addition, the nature, duration and purpose of social media use and school policies and parental involvement need to be assessed.

The frequency of risky behavior participation of Northern Cyprus 15- and 16-year-old students was investigated in the ESPAD survey and compared to those of adolescents in Southern Cyprus and Europe. European data included the average results for 37 participating countries. There are large differences in per capita gross domestic product (GDP), population and religion between Northern and Southern Cyprus that influence adolescent

substance use. Recent and lifetime use of cigarettes/e-cigarettes and alcohol; illicit drugs, including amphetamines, cannabis, cocaine/crack, ecstasy, methamphetamines, heroin, and LSD/hallucinogens; and misused therapeutic drugs and chemicals including inhalants, tranquilizers/ sedatives, painkillers, and anabolic steroids were obtained in the survey. Gaming and prevalence of gambling were also assessed for the Northern Cyprus cohort. Frequency data were evaluated qualitatively, as individualized data sets were not available.

Use of cigarettes, e-cigarettes, alcohol, and drugs was lower and generally substantially lower in Northern Cyprus youth, compared to their counterparts in Southern Cyprus and Europe. This was true for all the assessed risky behaviors except for lifetime cigarette use, for which Northern Cyprus students had a higher frequency of use than Southern Cyprus students. However, this changed recently, with rates decreasing by about half in Northern Cyprus adolescents, making cigarette use comparable between the two regions. Cigarette use in European youth was slightly higher than both Northern and Southern Cyprus. The negative health effects of tobacco are widely known, and tobacco use is a top cause of preventable morbidity and mortality throughout the world (Amialchuk & Sapci, 2022). Although traditional smoking may be on the decline, e-cigarette use is highly popular with teenagers.

Lifetime use of alcohol was prevalent in Northern Cyprus at 24.7%; however, use in the past year decreased to only 8.6%. However, one of five students reported binge drinking in the last month that was associated with other risky behaviors (e.g., riding with an intoxicated driver, drug use), as well as other acute harms including alcohol poisoning and blackouts, problems at school or work, increased risk of sexually transmitted infections, increased occurrence of alcohol related sexual or physical assault, and a higher likelihood of involvement in vehicle crashes or fatalities (Martin et al., 2018). Strategies to educate adolescents about the impacts of alcohol must begin by late childhood and should be executed at the family, community and national policy level.

Cannabis was the second most misused drug, with a lifetime frequency of use of 2%, declining to 0.7% in the past 30 days. Medical use only is approved for adults aged 18 or older, but this may allow easier access to the drug. Unfortunately, adolescent's perception of risk of cannabis use is low.

The most frequently used drug class by North Cyprus adolescents was painkillers at 2.8%; frequency of use of all other drugs was $\leq 2\%$. Over 70% of Northern Cypriot youth participated in digital gaming, while gambling was infrequent (6.5%). Gaming is a popular form of entertainment for 13- to 17-year-old students worldwide, with individuals averaging nearly 2 hours gaming each day (Alanko, 2023). Risky behaviors of particular concern in Northern Cyprus students were binge drinking and e-cigarette use. Although participation in these activities was generally low and typically substantially lower than that of Southern Cyprus and European students, these risky behaviors may still result in serious consequences. The differences may be due to cultural, political, legal, and/or socioeconomic factors, as well as education addressing risks associated with these activities. Even low rates of risky behaviors in Northern Cypriot youth may lead to substance dependence and addiction. Education and prevention at the individual, family, community, and national level is necessary to limit adolescent risky behaviors.

The Northern Cyprus ESPAD report identifies actions and interventions that might mitigate these risky behaviors. Of high importance is educating parents that their tobacco smoking increases susceptibility for their child's nicotine use. Educating families and students on short- and long-term negative effects of smoking is also necessary and should be early before a child first tries smoking. These negative health effects include lung cancer and heart disease, hypertension and poor exercise endurance. Strategies include increasing tobacco product taxes, prohibiting sales to minors, regulating advertising and packaging, penalize when regulations are not followed and fund smoking cessation programs.

The relationships between substance use, family support, peer support, perceived social pressure, school absenteeism and the duration of social media use among 15-16-year-old high school students in Northern Cyprus were also

probed to provide information on risk and protective factors. Family support was an important protective factor to prevent cigarette and alcohol use but did not significantly affect cannabis use. This potentially could be explained by the low prevalence of cannabis use in the sample. Higher school engagement reduced risky behaviors, while peer support only modestly reduced the frequency of getting drunk.

Social pressure was one of the strongest risk factors for substance use, especially alcohol use. School absenteeism and the duration of social media time was a risk factor for cigarette and alcohol use. Family problems, low parental supervision, peer pressure, poor attachment to school, and easy access to substances in the social environment were frequently highlighted risk factors.

Interventions including fostering family support and positive peer relationships, preventing absenteeism, increasing school engagement, and raising awareness of risky content on social media are key strategies to combat adolescent substance use.

Chapter 5 focused on individual protective factors (family support, school engagement, reading books for enjoyment, and active participation in sport) and substance use outcomes (smoking, alcohol, and cannabis use). If protective factors can be identified to mitigate adolescent substance use, they can be targeted in prevention strategies. Interestingly, school engagement demonstrated the most consistent and robust associations, particularly in relation to smoking and alcohol consumption but no single factor offered complete protection against substance use. Family support and reading were consistently associated with reduced smoking, alcohol use, and binge drinking. Sport involvement simultaneously promoted healthy behaviors, such as reduced smoking and cannabis use, but also exposed adolescents to environments where alcohol use was more common.

Social pressure, peer pressure and time spent on social media increased alcohol and cigarette but not cannabis use. Adolescents with low family support prioritized peer approval and were more vulnerable to social media influences, especially as time on social media increased.

7.3. Conclusions

The ESPAD cross-sectional study design precludes the ability to assess causality or observe changes over time. A longitudinal approach may provide deeper insights if resources are available to support the effort. Additionally, the absence of comparable data from previous years prevents the identification of long-term trends between protective factors and substance use behaviors in adolescents. Another limitation is the complex and often interrelated nature of protective factors; therefore, examining them in isolation may not account for their interactive effects. Future ESPAD questionnaires need to more thoroughly evaluate increasing e-cigarette use and consider adolescent's substance use who are no longer attending school. Substance use may be higher in this population cohort. Finally, only simple regression analyses were performed, which could miss potential interactions between variables.

Coordinated, multidimensional strategies are needed for the family, school, youth, digital media, and policy levels to prevent substance use in adolescents. Preventive strategies must strengthen school engagement, family support and foster social media literacy, resistance to peer pressure, and life skills. Targeted prevention efforts within sports is necessary to mitigate the risks of alcohol use during participation in team sports. The findings from the 2024 ESPAD survey emphasize the need for multifaceted, evidence-informed prevention approaches that are integrated into schools, families, and government initiatives to reduce substance use among adolescents in Northern Cyprus.

References

- Amialchuk, A., & Sapci, O. (2022). The long-term health effects of initiating smoking in adolescence: Evidence from a national longitudinal survey. *Health Economics*, 31(4), 597-613. <https://doi.org/10.1002/hec.4469>
- Bekiroğulları, Z., & Tremeşeli, T. T. (2023). Assessment of substance use among high school students in Northern Cyprus based on the Gateway Hypothesis. *The European Journal of Social & Behavioural Sciences*, 32(3), 162-174. <https://doi.org/10.15405/ejsbs.341>
- Birrell, L., Slade, T., Teesson, M., Prior, K., Chapman, C., Hides, L., McBride, N., Mewton, L., Allsop, S., Andrews, G., & Newton, N. C. (2020). Bidirectional relationships in the development of internalising symptoms and alcohol use in adolescence. *Drug and Alcohol Review*, 39(7), 950-959. <https://doi.org/10.1111/dar.13070>
- ESPAD Group. (2025). *Key findings from the 2024 European School Survey Project on Alcohol and Other Drugs (ESPAD)*. European Union Drugs Agency. <https://doi.org/10.2810/5746644>
- Garke, M. Å., Isacson, N. H., Sörman, K., Bjureberg, J., Hellner, C., Gratz, K. L., Berghoff, C. R., Sinha, R., Tull, M. T., & Jayaram-Lindström, N. (2021). Emotion dysregulation across levels of substance use. *Psychiatry research*, 296, 113662. <https://doi.org/10.1016/j.psychres.2020.113662>
- Inguglia, C., Costa, S., Inguglia, S., & Liga, F. (2019). Associations between peer pressure and adolescents' binge behaviors: The role of basic needs and coping. *The Journal of Genetic Psychology*, 180(2-3), 144-155. <https://doi.org/10.1080/00221325.2019.1621259>
- Leslie F. M. (2020). Unique, long-term effects of nicotine on adolescent brain. *Pharmacology, biochemistry, and behavior*, 197, 173010. <https://doi.org/10.1016/j.pbb.2020.173010>
- Levine, A., Clemenza, K., Rynn, M., & Lieberman, J. (2017). Evidence for the risks and consequences of adolescent cannabis exposure. *Journal of the American Academy of Child & Adolescent Psychiatry*, 56(3), 214-225. <https://doi.org/10.1016/j.jaac.2016.12.014>
- Luciana, M., Bjork, J. M., Nagel, B. J., Barch, D. M., Gonzalez, R., Nixon, S. J., & Banich, M. T. (2018). Adolescent neurocognitive development and impacts of substance use: Overview of the adolescent brain cognitive development (ABCD) baseline neurocognition battery. *Developmental cognitive neuroscience*, 32, 67-79. <https://doi.org/10.1016/j.dcn.2018.02.006>
- Martin, R. J., Cox, M. J., Chaney, B. H., & Knowlden, A. P. (2018). Examination of associations between risky driving behaviors and hazardous drinking among a sample of college students. *Traffic injury prevention*, 19(6), 563-568. <https://doi.org/10.1080/15389588.2018.1476690>
- Nath, A., Choudhari, S. G., Dakhode, S. U., Rannaware, A., Gaidhane, A. M., Dakhode, S., & Gaidhane, A. (2022). Substance abuse amongst

adolescents: an issue of public health significance. *Cureus*, 14(11).
<https://doi.org/10.7759/cureus.31193>

Wang, P., Abdin, E., Asharani, P. V., Seet, V., Devi, F., Roystonn, K., Lee, Y. Y., Cetty, L., Teh, W. L., Verma, S., Mok, Y. M., & Subramaniam, M. (2021). Nicotine Dependence in Patients with Major Depressive Disorder and Psychotic Disorders and Its Relationship with Quality of Life. *International Journal of Environmental Research and Public Health*, 18(24), 13035.
<https://doi.org/10.3390/ijerph182413>