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IMPACT OF DRUGS ON UNIVERSITY STUDENTS' LEARNING

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Abstract

The present study was conducted to assess the impact of drugs on university students' learning. It examined how drugs affect students' academic performance and well-being. The main aims were to explore the socio-economic profile of drug users, identify the leading reasons for abuse, assess family and peer attitudes, and determine the effects on health and learning. A descriptive survey design was adopted, as it allowed the researcher to present the characteristics of the population clearly. The sample included 70 male students from Government College University Faisalabad, selected through snowball sampling. Data were collected with the help of a structured and pre-tested questionnaire and analyzed using SPSS. Mean and standard deviation were calculated to rank the major factors. Results revealed that most users were undergraduates aged 21–25, with academic stress, peer pressure, and drug availability as the most common drivers of misuse. Families often showed sympathy, while peers were more likely to stigmatize, although both groups sometimes enabled continued use. Findings also confirmed that drug abuse had severe effects on students' health and learning, leading to weak concentration, poor memorization, absenteeism, low grades, and in some cases dropping out. The study highlights the need for targeted interventions by families, universities, and policymakers to reduce student vulnerability to drugs and safeguard educational outcomes.

INTRODUCTION

Drugs are chemical substances that alter the physical, mental, or emotional functioning of the human body. In pharmacology, a drug may be defined as a synthetic substance used for treatment, prevention, or diagnosis of disease, but in the context of abuse, it refers to the non-medical use of substances in ways that are harmful socially, cognitively, and physically (Khattak, Iqbal, Khattak, and Ullah, 2012). Recent research in Pakistan highlights increasing misuse of hashish, ecstasy, cocaine, and heroin among university youth (Sarfraz, Y., et al. 2025). Drugs can be both legal (such as prescribed medicines and cigarettes) and illegal (such as hashish, heroin, cocaine, and ecstasy). The misuse of these substances without medical supervision leads to addiction, which is

characterized by habitual and uncontrollable use. Drug abuse has become a major social and public health problem globally. Recent evidence links drug abuse with lower GPA, concentration problems, dropout risk and even impaired classroom engagement (Bugbee, B, et al. 2025). Among young people, especially students, the misuse of drugs has been linked with absenteeism, conflict with authorities, declining grades, and, in some cases, dropping out of school or university (UNODC 2022). The effects extend beyond the individual, creating wider social and economic costs such as family disruption and increased healthcare needs (Sujan et al., 2023).

In Pakistan, university students are increasingly exposed to both legal and illegal substances. Peer pressure, curiosity, and easy access have been identified as the leading causes of drug use, while family and social influences significantly increase vulnerability (Sajid, Tatlah and Butt, 2020). Commonly abused substances among Pakistani youth include hashish, ecstasy, cocaine, and heroin. These behaviours are associated with educational problems such as reduced classroom engagement, poor concentration, and lower achievement levels (Riaz, Ali & Ahmed, 2022). Similar patterns are seen elsewhere. For example, a Bangladesh study with over 400 students showed that drug users had significantly poorer academic outcomes than non-users (Sujan et al., 2023). Family and social structures play a key role in influencing student behaviour. Rapid social and economic changes, coupled with weakening family bonds, can expose young people to environments where drugs are more accessible. In societies where parents or peers are engaged in substance use, students are more likely to adopt similar behaviours. Conversely, environments with strong parental guidance and effective socialization can serve as protective factors.

The issue is not only one of health but also of education. School and university environments are expected to provide safe, inclusive, and supportive conditions for learning. However, drug use undermines these expectations by creating health risks, disrupting academic engagement, and reducing overall performance. According to recent research in Pakistan, substance abuse undermines the quality of learning environments: students who use illicit substances show significantly lower attendance, and many educational institutions lack adequate preventive policies or health-promotion programs to protect academic spaces (Sabeen, S. 2025).

The growing involvement of university students in substance use makes this a pressing concern for educational institutions and policymakers. Government universities in particular face challenges in addressing drug use among students, especially those from disadvantaged backgrounds. Faisalabad district, with its large student population, provides a significant context in which to examine these issues. This study, therefore, seeks to investigate the impact of drug abuse on university students' learning in Faisalabad, providing insights for parents, educators, and policymakers. The objectives of this study are:

- To study the socio-economic and demographic characteristics of students involved in drug use.
- To determine the different reasons for drug abuse among the students.
- To study the attitude of family members, friends, and other relatives towards people with an addiction.
- To suggest policy measures for controlling drug use among students.

2. Literature Review

Drug refers to the misuse of chemical substances, whether prescription or illicit, in ways that negatively affect health, social functioning, and education. The World Health Organization (WHO, 2023) notes that while substances may have medical purposes, they can cause significant harm when overused. The American Psychiatric Association (2022) defines drug addiction as a chronic brain disorder characterized by compulsive seeking and withdrawal followed by dysfunction across social, physical, and academic domains. According to Volkow (2020), substance misuse not only damages health but also undermines personal development and educational achievement.

The impact of drug use on academic learning has been widely documented. Bugbee et al. (2019) reported that students who engage in drug use tend to perform worse in school, miss more days of class, and have higher dropout rates. Madaki (2023) investigated similar outcomes in Nigerian schools, reporting a strong association between drug use, classroom disruption, and reduced cognitive performance. Sarfaraz and Malik (2023) emphasized that substance misuse can compromise attention and behavior, which are essential for classroom learning and overall academic success. Evidence from the United Nations Office on Drugs and Crime (UNODC, 2022; 2023) confirms that alcohol, cannabis, tramadol, and other substances are increasingly misused by adolescents and youth, with implications for academic progression and mental health.

The social and environmental drivers of drug use are equally important. Watts et al. (2024), in a meta-analysis, found that peer influence remains one of the strongest predictors of adolescent substance use, especially in university contexts. Stritzel (2022) also highlighted the role of community and social networks in adolescent drug use, particularly in the presence of adverse experiences. These findings suggest that while drug use has always been present in society, the combination of academic stress, peer influence, and the growing availability of substances has amplified the risks for today's students. Addressing these factors requires a coordinated approach that considers both family and institutional support.

3. Methodology

This study employed a descriptive survey design to examine the impact of drug use on university students' learning in District Faisalabad. Descriptive surveys are commonly applied in social science research to capture existing conditions and explore relationships within a population (Creswell and Creswell, 2018). Due to resource and time limitations, the research was restricted to Government College University Faisalabad (GCUF). The target population consisted of students identified as drug users at the bachelor's and master's levels. A non-probability snowball sampling technique was used to select 70 respondents. This sampling technique allows researchers to reach hidden or hard-to-identify populations such as individuals engaged in substance abuse (Etikan and Bala, 2017).

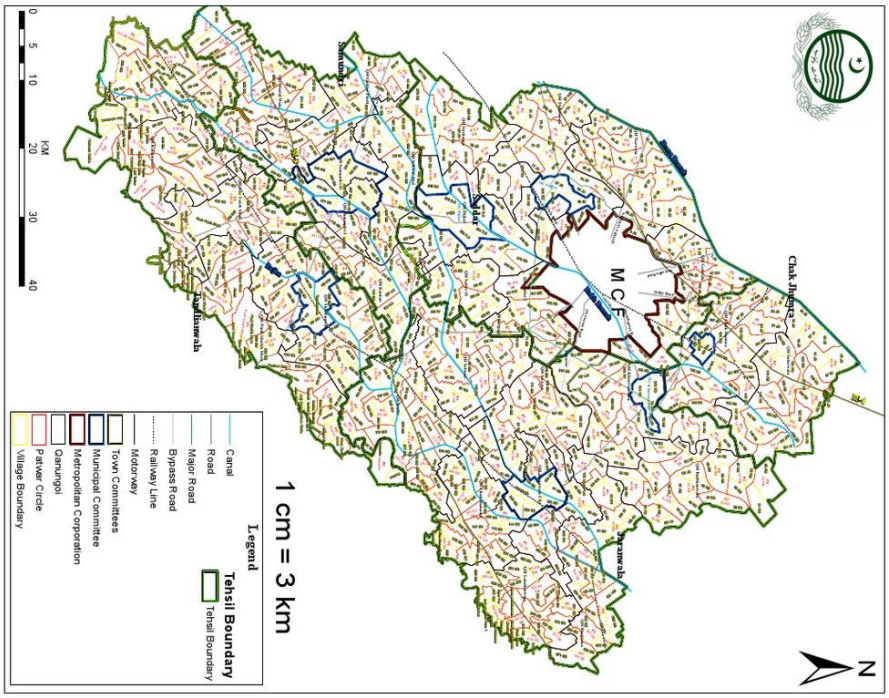

Figure 1:Shows Map of District Faisalabad

The choice of Faisalabad was informed by the researcher's familiarity with the area, which facilitated data access and improved the quality of responses.

Primary data were collected using a structured questionnaire, which was validated by a panel of experts and pre-tested with 10 respondents to ensure reliability. Reliability and internal consistency of survey tools are crucial in social research, and pretesting has been shown to improve data quality (Taherdoost, 2019). Necessary modifications were made prior to final administration. Questionnaires were distributed during official university hours and collected directly from participants. Data were analyzed using the Statistical Package for Social Sciences (SPSS) to generate descriptive statistics and draw conclusions, which is widely employed for descriptive and inferential statistics in education and health studies (Pallant, 2020). Ethical considerations included informed participation, researcher introduction to respondents, and efforts to address their concerns regarding the purpose of the study. Moreover, Due to the nature of the survey, formal ethics clearance was not required, but informed consent was obtained.

4. Results and Discussion

The socio-economic characteristics of the respondents comprise of age, education level etc. Different research studies illustrated that the socio-economic characteristics had immense effect on the drugs addiction behavior of respondents regarding student's education at university level.

Table 4.1: Demographic Characteristics of Respondents (n = 70)

Characteristic	Category	Frequency (f)	Percentage (%)
Age	21–25	36	51.4
	26–30	34	48.6
Education	B.Sc.	45	64.3
	M.Phil.	25	35.7

Gender	Male	70	100.0
	Female	0	0.0

The demographic profile of the respondents indicates that slightly more than half of the students (51.4%) were aged between 21 and 25 years, while 48.6% were in the 26–30 age group. In terms of educational status, the majority were bachelor's students (64.3%), whereas 35.7% were pursuing M.Phil. degrees. All participants in the study were male, reflecting the sample selection process which focused on male students only. These results suggest that young male students in their early to mid-twenties, particularly those at the undergraduate level, constitute the most affected group in relation to drug use at the university level.'

Table 4.2: Reasons for drugs abuse

Statements	Mean	S. D	Rank Order
Semester or class failure	6.84	0.367	1
Peer pressure	6.53	0.756	2
Availability of the drugs e.g. availability of money to buy	6.49	0.503	3
Frustrations at home e.g. family breakup, conflict with parents	5.63	2.168	4
To keep me awake so as to read more	5.63	2.16	5
Family background e.g. parents also drinks/taking drugs	5.29	2.39	6
Stress at home e.g. lack of university fees	5	2.542	7
Influence by mass media	4.46	2.224	8

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Table 4.2 shows the reasons for drug abuse among students reveal that academic stress was the most prominent factor, with semester or class failure ranked first (mean = 6.84). Peer pressure (mean = 6.53) and the easy availability of drugs, often linked to financial access (mean = 6.49), were also key contributors. Other notable reasons included frustrations at home such as family conflict (mean = 5.63), using drugs to stay awake for study purposes (mean = 5.63), and family background where parents or relatives also consumed substances (mean = 5.29). Stress related to paying university fees (mean = 5.00) and influence from mass media (mean = 4.46) were considered less influential but still relevant. These results are consistent with findings by Riaz et al. (2022), who reported that academic stress, peer influence, and drug availability were major drivers of substance use among students in Karachi. Conclusively, the results highlight that both academic challenges and social environments play a central role in shaping students' involvement in drug use.

Table 4.3: The attitude of family members, friends and other relatives towards the addicts

Statement	Mean	S. D	Rank order
Friends hate with you	6.5	0.54	1
Parents kindness at you	6.16	0.367	2
Care yourself from family	6.16	0.367	3

Right in property	4	2.014	4
Parents have soft attitude for you	5.71	1.678	5
Friends help you in drugs buying	4.11	2.011	6
Friends love with you	4	2.01	7
Parents like you drugs addiction habits	5.87	1.744	8
Drugs cause for good health	2	0	9
Drugs improve your social interaction	2	0	10
Family members support you in this action	2	0	11

Table 4.3 shows that friends hate with you, parents' kindness at you and care yourself from family are at 1st, 2nd and 3rd in ranking position with their mean values 6.50, 6.16 and 6.16 respectively. Outcomes show that did you have right in property, parents have soft attitude for you and friends help you in drugs buying are at 4th, 5th and 6th in ranking position with their mean values 4.00, 5.71 and 4.11 respectively. Results shows that friends love with you, parents like you drug addiction habits and drugs causes for good health are at 7th, 8th and 9th in ranking position with their mean values 4.00, 5.87 and 2.00 respectively. Outcomes shows that drugs improve your social interaction and family members support you in this action are at 10th and 11th in ranking position with their mean values 2.00 and 2.00 respectively.

Table 4.4: Physical and psychological condition of the drugs addicts:

Statement	Mean	S. D	Rank order
Negative effect on our health	7	0	1
Drug as your food in your life	6.5	0.504	2
Effect on your immunity system	6.36	0.478	3
Drugs cause diseases	6.34	0.47	4
Drugs addiction impact	6.31	0.468	5
Drugs effects on physical health	6.31	0.468	6
Drugs addiction impact on your personality	6.19	0.394	7
Drugs effect on your mental health	6.16	0.367	8
Drugs effect on body color	6.16	0.367	9
Feel comfortable after taking drugs	6	0	10
Take drug regular	4.5	2.518	11
Drugs effect on layout earning	4.5	2.518	12
Drugs necessary for health	4.5	2.18	13
Family deports you economically	4.5	2.18	14

Table 4.4 shows that did it have negative effect on our health, did the drug as your food in your life and effect on your immunity system are at 1st, 2nd and 3rd in ranking position with their mean values 7.00, 6.50 and 6.36 respectively. Outcomes shows that drugs cause diseases, drugs addiction impact and drugs effects on physical health are at 4th, 5th and 6th in ranking position with their mean values 6.34, 6.31 and 6.31 respectively. Results shows that drugs addiction impact on your personality,

drugs effect on your mental health and drugs effect on body color are at 7th, 8th and 9th in ranking position with their mean values 6.19, 6.16 and 6.16 respectively. Outcomes show that do feel comfortable after taking drugs, did you take drug regular and drug effect on layout earning are at 10th, 11th and 12th in ranking position with their mean values 6.00, 4.50 and 4.50 respectively. Outcomes shows that drugs necessary for health and Family deport you economically are at 13 and 14 in ranking position with their mean values 4.50 and 4.50 respectively.

Table 4.5: The impact of drugs addiction on students learning

Statement	Mean	S. D	Rank order
Effect on target achievement	7	0	1
Drugs effect on memorization	7	0	1
Reduce the self-learning	7	0	1
Effect on inquiry based leaning	6.9	0.503	2
Lack of concentration in period or study	6.81	0.39	3
Strained relationship with other students	6.69	0.468	4
Effect on daily class test	6.64	0.643	5
Low convention in period or study	6.51	0.503	6
Cause hurdle in fulfill educational objectives	6.5	0.504	7
Non attendance	6.51	0.503	8
Degrading in society	6.49	0.503	9
Drugs decrease rapport	6.49	0.503	10
Drugs effects on class quiz	6.33	0.473	11
Declining grades	6.31	0.468	12
Leave the university	6.31	0.468	13
Harassment	6.51	0.503	14
Cause the theft	6.31	0.4658	15
Reduce the activity base learning	5.24	2.424	16

The results in Table 4.5 show the effect on target achievement, the effect on memorization and whether it reduces the self-learning are the same results at 1st in ranking position with their mean values 7.00, 7.00 and 7.00, respectively. Outcomes show that it affects inquiry-based learning, lack concentration in a period or study and a strained relationship with other students are at 2nd, 3rd and 4th in ranking position with their mean values 6.90, 6.81and 6.69, respectively. Results show that the effect on daily class test, low convention in period or study and cause hurdle in fulfilling educational objectives are at 5th, 6th and 7th in ranking position with their mean values 6.64, 6.51 and 6.50respectively. Outcomes show that non-attendance, degrading in society and drugs decrease rapport are at 8th, 9th and 10th in ranking position with their mean values 6.51, 4.49 and 4.49, separately. Outcomes show that drug effects on class quiz, declining grades and leaving the university are at 11, 12 and 13 in ranking position with their mean values 6.33, 6.31 and 6.31, respectively. Outcomes show that harassment causes theft and reduces the activity-based learning are at 14, 15 and 16, with their mean values 6.51, 6.31 and 5.24, respectively.

Across the tables, academic stress, peer influence, and health deterioration consistently emerged as central themes, indicating that drug abuse affects multiple aspects of student life.

Discussion

This study aimed to examine the socio-demographic profile of drug users among university students, the reasons behind their substance use, and the consequences for their health and learning. The results provide clear insights into the prevalence and impacts of drug abuse in the higher education context of Pakistan. The demographic profile showed that all respondents were male, with just over half (51.4%) aged between 21 and 25 years and the rest (48.6%) aged 26–30. Most were undergraduates (64.3%), while 35.7% were enrolled in M.Phil. programs. These results suggest that young male students, particularly those at the undergraduate level, are most vulnerable to drug use, which mirrors evidence from international studies that have found men and younger students to be disproportionately affected (Bugbee et al., 2019; Madaki, 2023).

Analysis of the reasons for substance use revealed that academic stress was the most important factor, with semester or class failure ranked first (M = 6.84, SD = 0.367), followed by peer pressure (M = 6.53, SD = 0.756) and availability of drugs (M = 6.49, SD = 0.503). Other contributors included family conflicts, the desire to stay awake for study, and family background where parents also misused substances. Financial stress and media influence were ranked lowest. These findings are consistent with Riaz et al. (2022), who found that stress and peer influence were major drivers of drug use among students in Karachi, and with Watts et al. (2024), whose meta-analysis confirmed the strong role of peer networks. Attitudes of family and friends were mixed: while friends often stigmatized users (M = 6.50), parents tended to show kindness and concern (M = 6.16), though in some cases parental leniency or peer support facilitated continued substance use. Stritzel (2022) similarly noted that communities and peers can both stigmatize and enable youth drug behaviors depending on context.

The study further highlighted the severe physical, psychological, and educational impacts of drug abuse. Respondents strongly agreed that drugs had negative effects on health (M = 7.00), weakened immunity (M = 6.36), and damaged both personality and mental wellbeing (M = 6.19–6.16). These results reinforce global findings that substance misuse undermines physical and mental health (UNODC, 2022; Volkow, 2020). Most critically, the academic effects were profound: drug use was reported to reduce self-learning and memorization (M = 7.00), impair concentration (M = 6.81), and strain peer relationships (M = 6.69). It also affected performance in class tests (M = 6.64), quizzes (M = 6.33), and overall grades (M = 6.31), with some students considering leaving university altogether. Sarfaraz and Malik (2023) observed similar patterns of disrupted attention and performance among Pakistani students, while UNODC (2023) emphasized that substance misuse directly undermines educational attainment across contexts. Taken together, these findings suggest that drug abuse among students is both a health crisis and an academic challenge, driven by stress and social influences and resulting in serious consequences for learning and well-being.

Conclusions:

This study aimed to examine the impact of drug use on university students' learning in District Faisalabad, with particular focus on demographics, causes, family and peer attitudes, health outcomes, and academic effects. The findings revealed that substance misuse was concentrated among young male undergraduates aged 21–25, highlighting early adulthood as a period of high vulnerability. Academic stress, peer pressure, and easy access to drugs were identified as the most prominent drivers of misuse, while family conflict and financial strain played secondary roles. Regarding attitudes, peers often stigmatized users, while parents showed kindness and sympathy, though in some cases leniency or indirect support enabled continued abuse. In relation to health, students reported weakened immunity, psychological instability, and personality changes. At the same time, academically, they experienced reduced concentration, poor memorization, absenteeism, and declining grades, with some considering withdrawal from university. Taken together, the study concludes that drug abuse is both a health

and academic crisis, one that undermines personal development, disrupts learning environments, and poses long-term risks for national progress if left unaddressed.

RECOMMENDATIONS

Based on the study's findings, several measures are suggested in direct response to the objectives. First, universities should regularly monitor the socio-economic and demographic profile of students through surveys and counseling units to identify high-risk groups early. Second, academic stress as a major cause of drug abuse calls for remedial programs such as mentoring, study skills workshops, and stress management sessions to support struggling students. Third, families and peers play a decisive role, so awareness campaigns should be launched to equip them with the knowledge to discourage substance use while offering emotional support without enabling the behavior. Fourth, health services at universities must include confidential screening, counseling, and referral systems to address both physical and psychological harm caused by drugs. Fifth, since drug use directly undermines learning, institutions should strengthen academic support mechanisms such as tutoring and attendance tracking to help recovering students reintegrate into their studies. Finally, at the policy level, the government and higher education authorities should enforce strict controls on drug availability near campuses and integrate anti-drug education into curricula, ensuring a coordinated response across institutions and communities.

REFERENCES:

American Psychiatric Association (2022) Diagnostic and statistical manual of mental disorders, fifth edition, text revision (DSM-5-TR®). American Psychiatric Association Publishing. Available at: https://psychiatryonline.org/doi/book/10.1176/appi.books.9780890425787

Bugbee, B.A., Beck, K.H., Fryer, C.S. and Arria, A.M. (2019) 'Substance use, academic performance, and academic engagement among high school seniors', Journal of School Health, 89(2), pp. 145–156. https://doi.org/10.1111/josh.12723

Creswell, J.W. and Creswell, J.D. (2018) Research design: Qualitative, quantitative, and mixed methods approaches. 5th edn. Thousand Oaks, CA: SAGE.

Etikan, I. and Bala, K. (2017) 'Sampling and sampling methods', Biometrics & Biostatistics International Journal, 5(6), pp. 215–217.

Khattak, M.A., Iqbal, N., Khattak, S.R. and Ullah, I. (2012) 'Influence of drugs on students' performance: a qualitative study in Pakistan university students', Interdisciplinary Journal of Contemporary Research in Business, 4(8), pp. 826–838.

Madaki, K. (2023) 'The burden of drug abuse: Predictors of prescription drug abuse among women in Northern Nigeria. A systematic review', Scientific African, 22(e01952). https://doi.org/10.1016/j.sciaf.2023.e01952

Pallant, J. (2020) SPSS survival manual: A step by step guide to data analysis using IBM SPSS. 7th edn. London: Routledge.

Riaz, S.U., Iqbal, N., Mehmood, B., Nasir, R., Naqvi, S., Junejo, M., Hassan, A. and Muhammad, G. (2022) 'Effect of illicit substance use on academic performance of medical students in Karachi, Pakistan', Public Health Toxicology, 2(1), pp. 1–4.

Saher, S. (n.d.) Exploring drug use trends in Pakistani youth: A systematic synthesis of risk factors and societal impact. ACE College for Women, Faisalabad. Available at: https://tpt.scione.com/newfiles/tpt.scione.com/15/15-TPT_1.pdf

Sajid, M.A., Tatlah, I.A. and Butt, I.H. (2020) 'Causes of drug abuse among university students in Pakistan: Variation by gender and drug type', Pakistan Social Sciences Review, 4(1), pp. 459–468.

Sarfaraz, B. and Malik, A.A. (2023) 'The standardization of the teacher's evaluation of student's conduct questionnaire in Hyderabad Pakistan', Pakistan Journal of Educational Research, 6(2), pp. 329–341. https://doi.org/10.52337/pjer.v6i2.806

Sarfaraz, Y., Jafri, L., Majid, H., Khan, N.U., Sadiqa, A., Khan, A.H., Siddiqui, I. and Ahmed, S. (2025) 'Exploring landscape of drug abuse trends in Pakistan: A decade and a half of clinical laboratory big data analysis', PLOS Global Public Health, 5(5), p. e0004424. https://doi.org/10.1371/journal.pgph.0004424

Shafiq, M., Shah, Z., Saleem, A. et al. (2006) 'Perceptions of Pakistani medical students about drugs and alcohol: a questionnaire-based survey', Substance Abuse Treatment, Prevention, and Policy, 1, p. 31. https://doi.org/10.1186/1747-597X-1-31

Stritzel, H. (2022) 'Peer and community influences on adolescent substance use in the context of adverse childhood experiences', Sociological Perspectives, 65(2), pp. 413–432. https://doi.org/10.1177/07311214211018718

Sujan, M.S.H., Tasnim, R., Hossain, S. et al. (2023) 'Impact of drug abuse on academic performance and physical health: a cross-sectional comparative study among university students in Bangladesh', Journal of Public Health (Berlin), 31, pp. 65–71. https://doi.org/10.1007/s10389-020-01428-3

Taherdoost, H. (2019) 'What is the best response scale for survey and questionnaire design? Review of different lengths of rating scale/attitude scale/Likert scale', International Journal of Academic Research in Management, 8(1), pp. 1–10.

United Nations Office on Drugs and Crime (UNODC) (2022) World drug report 2022. Available at: https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html

United Nations Office on Drugs and Crime (UNODC) (2023) World drug report 2023. Available at: https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2023.html

Volkow, N. (2020) Drugs, Brains, and Behavior: The Science of Addiction. National Institute on Drug Abuse. Available at: https://nida.nih.gov/research-topics/addiction-science/drugs-brain-behavior-science-of-addiction

Watts, L.L., Hamza, E.A., Bedewy, D.A. and Moustafa, A.A. (2024) 'A meta-analysis study on peer influence and adolescent substance use', Current Psychology, 43(5), pp. 3866–3881. https://doi.org/10.1007/s12144-023-04944-z

World Health Organization (WHO) (2023) Health topics: Substance use. Available at: https://www.afro.who.int/health-topics/substance-abuse